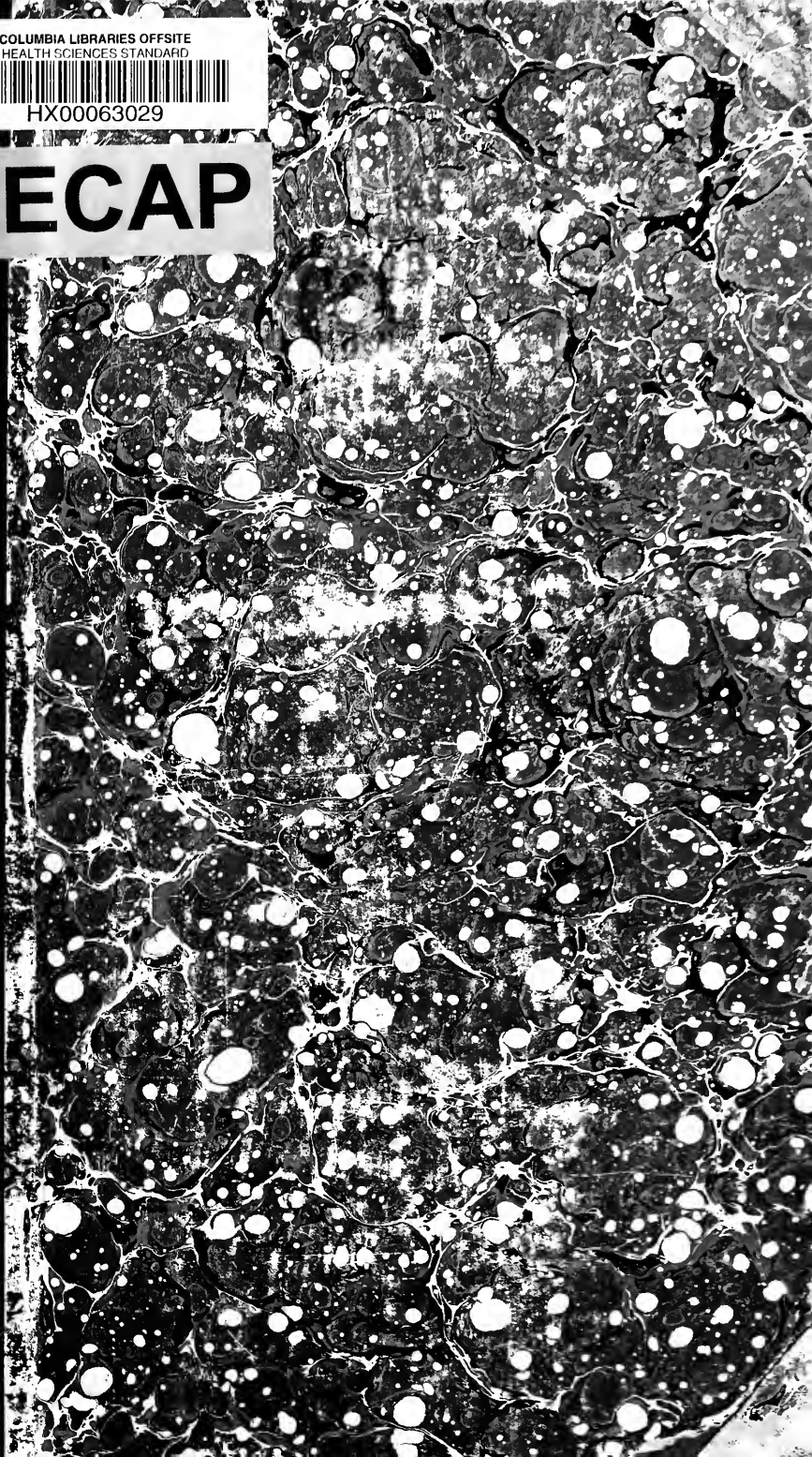


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THE
PATHOLOGY, DIAGNOSIS, AND TREATMENT
OF THE
DISEASES OF WOMEN

BY

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THE
PATHOLOGY, DIAGNOSIS, AND TREATMENT
OF THE
DISEASES OF WOMEN.

CHAPTER XLII.

FIBROID TUMORS OF THE UTERUS, POLYPUS, AND FIBRO-
CYSTIC TUMORS OF THE UTERUS.

Fibroid Growths of the Uterus—General Remarks—Four Varieties: 1. Sub-peritoneal or Peri-uterine; 2. Interstitial or Parietal; 3. Submucous Fibroid Tumors; 4. Fibrous Polypi—Their Pathology—In structure similar to the Uterus—Found in the single and married—Most common between the ages of 35 and 45—Statistics of Dr. West—Statement of Dr. Bayle—Dr. Walter's celebrated case of 71 pounds—The 1st variety may originate at any part of the surface—Rarely connected with the ovaries—Sir James Paget's observations—The 2d variety are usually smaller, and are often attended with distressing results—The 3d variety resembles the 2d, and often become fibrous polypi—The 4th variety exhibit a great diversity in size, from a pea to that of a child's head—Progress of these Growths as a whole—Named "muscular tumors" by Dr. Vogel—Absorption—Cases cited by Dr. Playfair and Dr. Williams—Their great variety—illustrated by University College Museum specimens—Cystic and Cretaceous Transformation—Fibro-cystic Tumors—Illustrative Cases—By Dr. Spencer Wells, Dr. Stokes, Dr. Hutchinson and others—Recurrent Fibrous Polypus (Sarcoma of Uterus)—Symptoms produced by Fibroid Uterine Growths—Certain other varieties of Uterine Polypus—Glandular and Mucous Polypi.

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Growth is Intra-uterine—Polypoidal Tumors—Removal by Enucleation—Destruction by Partial Removal—Treatment of the Hæmorrhage they produce by Incision of the Cervix—Treatment of Interstitial and Sub-peritoneal Growths—Removal of Fibroid Tumors by Gastrotomy—Statistics of the Operation—Hysterectomy—Battey's Operation—General and Palliative Treatment in cases of Fibrous Tumor of the Uterus—Food; Ergot; Kreuznach Baths; Electrolysis; Other Remedies.

The uterus is liable to be affected with growths of a peculiar character, variously designated "fibroid tumor," "fibroma," "myoma," "fibrous polypus," etc. The "fibrocystic" tumor of the uterus appears to be a variety of the same kind of growth.

These fibroid growths are very important in the pathology of the female sexual organs. They often interfere mechanically with the uterine functions, cause difficulties in menstruation, pain, prevent impregnation, lead to miscarriages, and give rise to various minor inconveniences. They sometimes destroy the subjects of them.

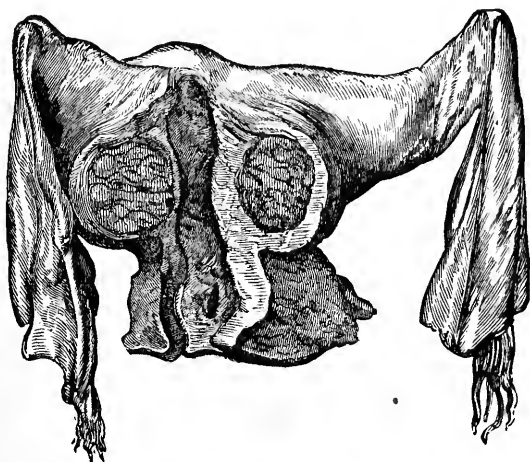
Any part of the uterus may be the original seat of the affection. In their essence these fibroid growths have a structure like that of the uterus. They are, for the most part, rounded, well-defined masses, more or less isolated from the adjacent parts, but still preserving, when in an active state, a regular vascular connection with those parts. They are subject to decay, absorption, and certain curious changes, and their period of activity is usually limited to the period of sexual vigor. They are found equally in the single and the married, are more usually observed after the age of 25, but often remain up to an advanced age. The particular period of life in which these growths have been observed is that during which the uterus is in the highest degree functionally active. Scanzoni considers that the fibrous tumor of the uterus is most common between the ages of 35 and 45; but of eighty-seven cases tabulated by Dr. West, twenty-one cases occurred between the ages of 20 and 30. Out of ninety-six cases it was observed by myself in eight cases before the age of 26.

It is highly probable that the fibroid tumor of the uterus is very frequently present in cases where its existence is not suspected; for, in certain positions of these tumors, the symptoms are not such as to attract particular attention. For this reason, we may perhaps be justified in presuming that the frequency of the disease before the age of 30 is not indicated in most tables given on this subject. The state-

ment of Bayle, to the effect that the fifth part of women above 35 years old are affected with fibrous tumor of the uterus, does not appear to be borne out by more recent pathological inquiries. The disease is of frequent occurrence undoubtedly, but the case is overstated by Bayle. Sometimes they occur singly; more often we meet with two or more in the same uterus.

The size of these growths varies from a pea to a mass large enough to occupy the whole abdominal cavity. In a case which I have related in the "Obstetrical Transac-

FIG. 170.*



tions,"† the tumor, which grew from the uterus near the cervix, measured, when removed from the abdomen, 16 inches in diameter and 44 inches in circumference, and its weight was 42 lbs. The patient, who had been under the care of the late Dr. Uvedale West, of Alford, died almost suddenly, from an attack of hæmorrhage, at the age of 53, and the tumor had been growing for ten years.

In Walter's celebrated case the tumor weighed 71 lbs., and others still larger have been described.

* Fig. 170 represents a small fibroid tumor of the interstitial variety growing in the uterine wall. From a preparation in University College Museum.

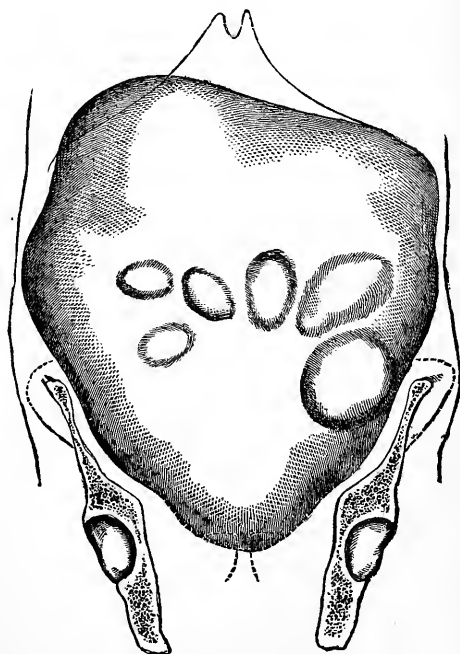
† Vol. ii., p. 240.

Fibroid growths of the uterus are now divided, according to the accident of their position, into the following classes:

a. Those growing from the exterior of the uterus by a pedicle, or sessile, as the case may be—*sub-peritoneal*.

b. Those growing in the thickness of the uterine wall, covered on both sides by uterine tissue—*parietal* or *interstitial*.

FIG. 171.*



c. Those growing from the internal wall, projecting more or less into the cavity—*sub-mucous*.

d. Those attached to and growing from the interior of the uterus, and connected to it by a narrower portion—the pedicle—*fibrous polypus*. Many of these cases have been at one time of their career sub-mucous fibroid tumors.

* By way of contrast to Fig. 170, Fig. 171 shows a fibrous mass of enormous size, from a patient at University College Hospital, who had been the subject of this growth for upward of ten years.

Each of these must be considered separately.

a. *The sub-peritoneal fibroid growths* may originate at any part of the surface of the uterus, mostly from the upper part of the organ. Sometimes they originate quite low down on the cervix. These tumors attain a larger size than those situated in the wall of the uterus or within it; the very large specimens belong to it; they are attached by a broad or narrow portion. The pedicle may be of considerable length, and corresponding tenuity, and the tumor then hangs freely in the abdominal or pelvic cavity. If the tumor is broadly attached to the uterus, this organ generally increases much in size, but if the pedicle is narrow, such is not the case. In the very large tumor (41 lbs.) previously alluded to the uterus was quite atrophied. We often see more than one sub-peritoneal tumor in the same patient.

A very curious feature in the history of these sub-peritoneal tumors is that the pedicle is sometimes torn across, and the mass entirely separated from the uterus, while the tumor itself becomes fixed to and grows on some other part of the peritoneal surface. This transplantation of fibroid tumors has been observed in several cases; it appears to be produced by the tumor becoming adherent elsewhere; the pedicle becomes stretched, possibly also *rotated* in consequence of the motions of the uterus and intestines, and finally gives way.

Here it must be mentioned that fibroid growths are sometimes found connected with the peritoneum in the vicinity of the uterus which have an origin independent of the uterus altogether. These must not be confounded with transplanted fibroid tumors of the uterus. It appears that growths in no way distinguishable by their microscopic characters from uterine fibroid tumors may originate in the position above indicated. Sir James Paget observes that they are probably limited to those parts in which fibrous and smooth muscular tissue, like that of the uterus, extends—that is to say, the utero-rectal and utero-vesical folds of the broad ligament.* Muscular fibres lying under the peritoneum covering the uterus, broad ligaments, and ovaries, and serving certain important purposes in the process of ovulation (see vol. i., p. 45), exist in the positions mentioned by this eminent pathologist as those in which fibroid

* "Surgical Pathology," p. 140, 1st ed.

tumors may originate. It is likely that the fibroid tumors of the ovaries—which are extremely rare—belong really to the category now under consideration, and that they originate in the muscular layer under the peritoneum in the neighborhood of the ovary. Even in the ovaries themselves—if we adopt the views of some observers—are to be found muscular fibres, which would account for the initiation of fibroid tumors of the ovary. I believe it will serve a useful purpose if we denominate these tumors as *peri-uterine fibroid tumors*, in order to distinguish them from those actually and primarily connected with the uterus.

b. Interstitial or Parietal Fibroid Tumors.—These do not attain usually so large a size. The

FIG. 172.*



uterus always grows as a whole, enlarging often to a very great size. These tumors have usually a loose connection with the organ, being enclosed in a capsule, out of which they may be generally shelled on cutting through the uterine wall containing them (see Fig. 170). They have vascular relations with the uterus at one or more points only. They are found in the wall of the body of the uterus; they distort and alter the shape of the cavity of the uterus; if the whole organ become very large the uterus generally rises as

a whole out of the pelvis. In some instances its shape prevents its escape from the cavity of the pelvis, and distressing results may then ensue.

c. The sub-mucous fibroid tumors resemble those last described, but they project more into the uterine cavity. Thus we may find the uterine cavity of great length, but having a crescentic outline owing to one of these tumors, which may be of great size, occupying one side of the uterus. The opposite side is expanded and stretched over it.

All sorts of varieties in regard to position are observed. These sub-mucous tumors are generally encapsuled. After the lapse of some time many of them become fibrous polypi.

* Fig. 172 represents the outline of a uterus affected with fibroid tumors, interstitial and sub-peritoneal, from a patient in University College Hospital.

d. Fibrous Polypi of the Uterus.—These generally originate as sub-mucous fibroid tumors. They are attached to the inner surface of the uterus by a pedicle of very varying thickness. Sometimes the attachment is very wide, covering the whole fundus or the whole of one side. Their size varies from a pea to the size of a child's head, or even larger. When not larger than an egg, they usually escape from the uterus, or partially so, and hang down into the vagina; but when larger than this they may be retained wholly in the uterus for some years. Much depends on the size of the pedicle; when narrow, they may be pushed down into the os uteri early. They present a smooth exterior, and are usually quite hard and firm. They excite much irritation, bleeding, and frequent contractions of the uterus (see Fig. 175).

We may now consider the nature, history, and progress of these fibroid growths of the uterus as a whole.

Their *growth* is always slow. Thus a tumor may be ten or twelve years attaining the size of a melon, and it would hardly attain such a size as this in less than three or four years. This will convey some idea as to the rate of progress.

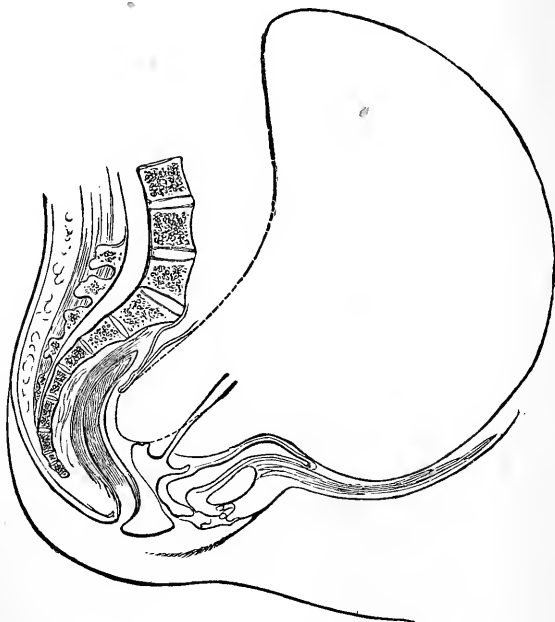
As to their *structure*, it is pretty uniform. Vogel named them "muscular" tumors. They contain many muscular fibres of the unstriped variety, precisely like those found in the substance of the uterine walls (see Fig. 1A, and Fig. 176). There are also many delicate filaments presenting an undulating or waved arrangement. These two elements constitute the bulk of the tumor, but there are to be seen also many fusiform nucleated cells with granules and molecular matter. They have on section a dense whitish structure, in which can be recognized the rounded nest-like portions of which they are made up. The appearance of the section much resembles that of the uterine wall. Harder or softer, now vascular, now paler; such are the variations observed.

They sometimes remain stationary as regards growth. More generally they tend outward, growing toward the exterior or interior of the uterus, according to their primary position. Growing internally, they become *polypi*, and either remain suspended for a longer or shorter time by a pedicle from the interior of the uterus, or become detached therefrom and expelled entirely.

The question as to whether they are capable of undergo-

ing absorption has been much debated. There can be no question, however, that these growths do undergo absorption in certain cases. Dr. Playfair* has adduced cases to prove this. I have observed in my own practice a sufficient number of facts to thoroughly convince me that such absorption may occur, and have known tumors of consider-

FIG. 173.†



able size to actually disappear after a lapse of time varying from two to three or four years. In other cases, again, I have known them to undergo great diminution. This point will be considered further under the head of treatment.

Dr. John Williams has observed that fibroid tumors of

* "Obst. Trans.," vol. x., p. 102.

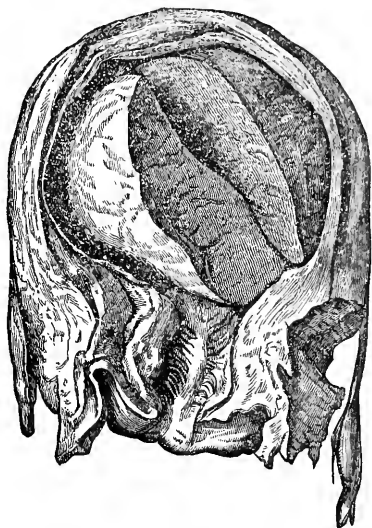
† Fig. 173 gives a lateral view of an enormous fibroid growth, from a patient in University College Hospital. The sound could be introduced within the uterine cavity as far as the point to which the lines in the drawing extend.

the uterus undergo, frequently at all events, notable alterations in size at apparently regular times, these changes having important relations to the menstrual periods.

Dr. Williams* relates five cases in which the changes which occur in the size of the uterus with fibroid tumor were observed over a length of time. The tumors were all of considerable size. Great variations were found to take place.

The tumor was in each case lodged in the uterine wall. In all the cases there was profuse hæmorrhage. The varia-

FIG. 174.†



tions in size amounted to over one inch in vertical measurement, and in one case the transverse measurement varied two inches. The uterus was found to decrease in size immediately after the menstrual period began. The increase in size was noted to occur as early as one week after menstruation, and was found to be progressive afterward. The

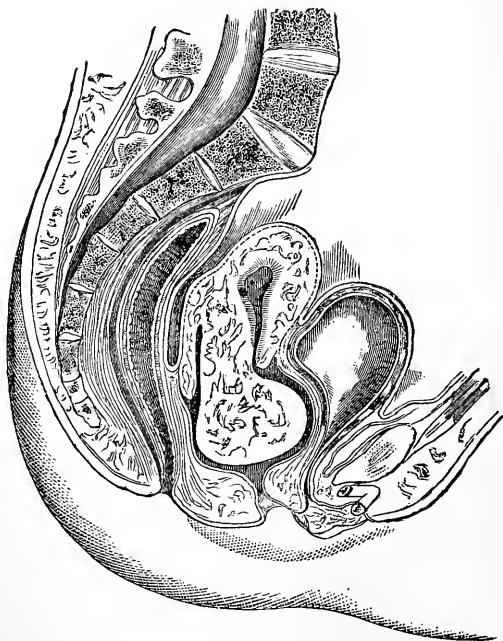
* "On some Periodical Changes which occur in Fibroid Tumors of the Uterus, and their Significance." By John Williams, M.D. *Lancet*, May 15, 1880.

† Fig. 174, from a preparation in University College Museum. A submucous fibroid tumor, polypoidal in character.

decrease was equally great whether the flow was profuse or not. Dr. Williams considers that the decrease was due to contractions of the uterus and tumor, these contractions resulting in expulsion of the blood into the plexuses of the pelvis, the vessels of the broad ligament, and the decidua, giving rise to the appearance of congestion.

Fibroid growths of the uterus sometimes undergo a *cretaeous transformation*, becoming smaller in bulk at the same

FIG. 175.*



time. Another change occasionally observed is the *cystic transformation*. Thus a fibrous polypus may become changed, after remaining in utero some time, into a cyst-like body, each cyst containing fatty *débris*. Here the "cysts" probably represent the centres of development of the original fibroid tumor. Of this I have related a case. The

* Fig. 175 represents a fibrous polypus projecting from the uterus into the vagina: operated on in University College Hospital.

so-called "fatty polypi" of the uterus are instances of the same kind. The cystic transformation does not appear to affect parietal fibroid tumors, but we have some very important instances of it in that tumor which is now and then found external to the uterus—the fibro-cystic tumor of the uterus. A careful examination of the facts recorded leads to the conclusion that these fibro-cystic tumors, which in many particulars so much resemble ovarian cystic tumors, are primarily fibroid tumors, either sub-peritoneal uterine fibroids, or sub-peritoneal peri-uterine fibroids (see p. 213). The importance of these rare tumors is great, inasmuch as they have been mistaken for ovarian tumors. Hence the interest of this cystic transformation. Paget* remarks on

FIG. 176.†



this subject, that the formation of cysts in fibrous tumors is not rare, especially if they be more than usually loose-textured; that the cyst formation may be due to a local softening and liquefaction of part of the tumor, with effusion of fluid in the affected part, or to an accumulation of fluid in the interspaces of the intersecting bands; and he accounts thus for the formation of the roughly bounded cavities which may be found in the uterine tumors.

Case I.—The following case of fibro-cystic tumor of the uterus is related by Mr. Spencer Wells.† The patient was single, æt. 53; there was an irregular, obscurely fluctuating tumor in the abdomen, menstruation latterly scanty, abdo-

* "Surgical Pathology," vol. ii., p. 137, 1st ed.

† Fig. 176 represents the microscopical structure of an ordinary fibrous polypus: A the harder central, and B the softer external layers.

‡ "On Diseases of the Ovaries," vol. i., p. 354.

men increased in size from 1853 to 1863, when an operation was undertaken. The tumor was closely adherent to the right iliac fossa, connected with the uterus by a thick band; it was a fibro-cystic growth from the right side of the fundus; its solid portion weighed 16 lbs., and from a large cyst within it 26 pints of fluid and 4 lbs. of lumpy masses of decomposed fibrin were removed. The uterus was twice its natural size, the os was situated high up, and behind the tumor.

Case II.—A second very interesting case is also recorded by Mr. Spencer Wells.* The lady, æt. 45, was operated upon as for ovariectomy. Ten years before, two tumors the size of a goose egg had been detected by Dr. Stokes, one central, a little above the umbilicus, the other under the anterior-superior spinous process of the ilium. At the time of the operation, there was above much ascitic fluid, below what appeared to be a multilocular cyst. The tumor was found to consist of two parts: the left, which was removed, was attached to the uterus, and to the other part, which was not removed. The removed portion measured 18 inches by 12, and was 7 inches thick, weighed 20 lbs., in addition to 12 pints of bloody serum removed during operation. It was composed of fibrous tissue split up by little cavities containing serum. In some parts were little masses like fibroid tumors—these in process of fatty and calcareous transformation. In others cysts with blood contents, one of which was the size of an adult head, divided into several compartments. The second tumor, removed after death, measured 18 inches by 16, and 7 inches thick, attached by a pedicle $3\frac{1}{2}$ inches long and 2 broad, which pedicle was itself hollowed into cysts. In it was one large cyst 12 inches in diameter. The uterus was a narrow tube 7 inches long.

Case III.—In a case operated on by Mr. Baker Brown in 1862, the age of the patient was 36. Enlargement of the abdomen for six years. The tumor could not be removed. The specimen, removed after death, was exhibited at the Pathological Society, and reported on by Mr. Holmes and Mr. Nunn.† The fundus of the uterus was directly continuous with the substance of the tumor, the solid part of the tumor separated into two parts near the uterus by interposition of large cysts. The mass of the tumor was situated in the sub-peritoneal tissue, and adhered above to the

* *Op. cit.*, p. 356.

† "Trans. of Path. Soc.," vol. xiv., p. 199.

omentum, in the tissue of which some fibrous nodules were to be seen. . . . "The great tumor was made up of a mass of nodules or rounded tumors of a fibrous appearance and consistence, separated from each other by large cysts, in many of which a purulent fluid was still contained. The tissue of the tumors resembled under the microscope the ordinary fibroid tumors of the uterus, but many of them contained cysts of various sizes, and in almost all some very small spaces, which seemed the commencement of such cysts, could be seen. The reporters considered it to be a specimen of fibro-cystic tumor, attached to and incorporated with the fundus uteri, but probably originating in the sub-peritoneal tissue in its neighborhood.

A review of the facts relating to these fibro-cystic tumors renders it probable that the cavities in them are hardly cystic in the true sense of the word. They appear to be often formed by the breaking up or softening of parts of the tumor by hæmorrhage within it, by formation of puriform material, and other changes of a destructive character. Further, these tumors appear always to have a very chronic course, a fact which should be of great service in their diagnosis from ovarian tumors.

Recurrent Fibrous Polypus. Sarcoma of the Uterus.—This designation is applied to a very rare affection. It is a growth proceeding from the inner wall of the uterus, and projecting downward through the os in the manner of ordinary fibrous polypus, but differing from ordinary polypus in that a new tumor is liable to grow soon after the old one is removed.

*Case of "Recurrent Fibroid Tumor" (Dr. West).**—A polypus the size of a pigeon's egg was found protruding from the os uteri. Portions of it were torn away by repeated operations, nine of which were performed in the course of a year and a half, but the growth always recurred, and, after having been six years under observation, the patient died. Her age was 22 when first seen; after death a large tumor was found in the abdomen, like that in the uterus, and continuous through the uterine wall with it. Similar tumors were found in the lungs, in the pericardium, and in the body of the sixth cervical vertebra. The tumors were all alike, composed of oat-shaped cells, mingled with others

* "Diseases of Women," 2d ed., p. 333. For a particular account of the *post-mortem* appearances in this case, drawn up by Mr. Callender, see "Trans. of the Path. Soc.," vol. ix., p. 327.

of a flattened fibroid form. The tumors were lobulated, divided by septa; they were soft and elastic. The tumor within the uterus grew from a broad base.

Case related by Mr. Hutchinson.* There was a recurrent fibroid tumor of the uterus, assuming a polypoid shape, in a woman, æt. 39, the history of which extended over a period of three years, at the end of which time the case ended fatally. The growth was polypoid in shape, soft, and lacerable, and attempts to remove it entirely failed from this circumstance. It was three times partially removed, growing again after each operation. The growth was attached by a broad base to the whole of the fundus and posterior uterine wall. It was soft, lobulated, of a gray-white color, and readily tore up into fibrils, all of which had a parallel arrangement. Nuclei and numerous small cells were seen. The tumor, very distinct from ordinary fibrous tumors of the uterus, presented no resemblance to epithelial or scirrhous cancer. There were no secondary deposits in this case.

The tumors in both these cases appear to have been identical with those found in other parts and known as recurring fibrous tumors. In both instances there were severe floodings, offensive discharges, and other symptoms present in bad cases of polypus uteri.

The *symptoms* produced by fibroid growths of the uterus vary excessively. Hæmorrhage is frequent when fibrous polypus is present, less so in the parietal form, least so in the sub-peritoneal tumor. Watery discharges, sanious, or even offensive discharges attend polypi, but not other cases, as a rule. Pain is usually observed in all varieties of cases. In some cases the suffering experienced is most intense in degree. The degree of pain is in no way related to the size of the tumor, for very large tumors may give comparatively little uneasiness. Menstruation is generally disturbed. In some cases there is very severe dysmenorrhœa. The mechanical results are difficulties in micturition, in defæcation, prolapsus of the uterus, pressure on the veins in the pelvis, and consequent œdema, pressure on the nerves giving rise to pain or numbness extending usually down one of the thighs, etc. These mechanical disturbances vary in kind and degree as the tumor is large or small, and according to its shape and position. It may be so placed and so

* "Trans. of the Path. Soc.," vol. viii., p. 287.

large as to actually block up the pelvis, the functions of the rectum and bladder being then so seriously interfered with that death results.

CERTAIN OTHER VARIETIES OF UTERINE POLYPUS.

Certain growths from the interior of the uterus which now and then assume the characters of polypi must here be mentioned. One of these is the *glandular polypus*. It is an hypertrophy of the mucous lining of the uterus, containing canals or channels, which appear to be the uterine glands enlarged. Dr. Oldham's "channel polypi" seem to belong to this category. Mr. Wood * exhibited a specimen at the Pathological Society having the size of a small walnut, a broad base growing from the fundus. It was soft, very vascular, and there were seen numerous tubes or canals travelling through the substance and connected by strong processes of fibrous tissue. This specimen will serve as a type of the class. They are not common. The so-called "fungous" growths now and then found in the uterus are in most cases simply the result of congestive hypertrophy of the mucous membrane (see vol. i., p. 148).

Next we have *mucous polypi*, as they have been termed, consisting of enlarged mucous follicles from the cervical cavity of the uterus, attached generally by a long pedicle, and hanging down in the vaginal canal. Their size varies from a barleycorn to that of a walnut.

These smaller polypi may occasion hæmorrhages and other inconveniences apparently disproportionate to their size.

DIAGNOSIS.

The diagnosis of the various forms of fibroid growths of the uterus is only to be satisfactorily made by investigating the condition of the uterus physically. Digital examination of the uterus from the vagina is of great service in this respect. The finger, aided by the sound, in this way enables us to estimate very accurately the general relations of fibroid tumors when not of great size. The existence of polypi is ascertained in the same way, it being now and then necessary also to dilate the os uteri, to gain access to these polypoidal growths.

* "Trans. of the Path. Soc.," vol. x., p. 206.

The examination of the abdomen by the touch is always required to determine the relations of the larger varieties, and the conjoint examination by one finger in the vagina and the other hand laid on the abdomen is frequently a great aid to the diagnosis.

It will thus be seen that when the case before us dates back for any considerable time, the diagnosis up to a certain point is comparatively easy; the firmness and density of the tumor being peculiar and characteristic. The slow growth of the tumor and its firmness and solidity separate it from the ordinary forms of ovarian tumor, but there are some forms of ovarian tumor with which it may more readily be confounded. In cancerous enlargement of the uterus the progress is less chronic than in fibrous tumor; moreover, cancer is often present in other organs also. There are other considerations which are equally significant in the diagnosis of fibrous growths. When the fibrous growths are external to the cavity of the uterus, the symptoms are often very slight, and the general health of the patient may be unaffected, unless the shape or position of the tumor be such as to mechanically interfere with the evacuation of the bladder or of the rectum. In the early stage of the growth of such tumors there may be, however, mechanical derangements, these being entirely absent at a later period when the tumor has risen out of the pelvis into the abdomen. If, on the other hand, the uterus be enlarged *together with* the tumor, as it necessarily is when the tumor is enclosed within it, the symptoms are almost always more severe and such as to attract attention at an early period. Profuse menstruation, hæmorrhages, serous discharges, more or less constant pains, and discomfort of various kinds, which by their association and long continuance not rarely reduce the patient to a very low debilitated state, are present under such circumstances; and a slow-growing, hard, symmetrical tumor, felt above the pubes in a patient with symptoms such as those described, generally proves to be a large polypus of the uterus. The only condition capable of closely simulating this condition is internal cancer of the uterus—a very rare disease, and one which might be expected to have a less chronic course than fibrous polypus. The state of the lower segment of the uterus affords valuable diagnostic information in cases of hard uterine enlargement. When a polypus is present, the examination of the os, and through this opening of the interior of the uterus

by means of the uterine sound, generally gives conclusive information on this point. Slight consideration will be sufficient to show that between fibrous tumors situate in the wall of the uterus, but partly projecting into the cavity, and fibrous polypi, the diagnostic signs would not be very decided. The symptoms presented by the patient give, however, some material assistance. Thus, as observed by Scanzoni, in the case of fibrous tumors growing near the cavity, but interstitial in character, the pains experienced by the patient are generally more severe than when there is a polypus present, while, at the same time, the amount of hæmorrhagic loss is generally much less considerable in the former than in the latter case.

A hard, firm, resisting, well-defined tumor, involving the uterus, reaching as far as, or beyond the umbilicus, which has been growing for three or more years, will, if uniform and symmetrical in shape, probably prove to be a fibrous polypus of the uterus, but if there be a want of symmetry about the tumor we have probably to do with a fibrous growth which is not within the uterine cavity. More generally we are able to recognize this latter fact at once, judging by the unevenness of the surface of the tumor felt through the abdominal parietes, while in other cases it is still more evident from the circumstance that the fingers recognize the presence of rounded, knob-like masses, which are fibrous tumors growing from the exterior of the uterus. Sometimes these growths are pedunculated, and then they are movable to an extent varying with the length of the pedicle.

The solid tumors of the ovaries may, under certain circumstances, present physical signs very closely resembling those of fibrous tumors of the uterus. The greatest amount of difficulty is in deciding between a tolerably large fibrous tumor pedunculated, and to a certain extent movable independently of the uterus, and some solid tumors of the ovary, while the physical inconveniences produced may be identical in the two cases. I recollect seeing an enormous fibroid tumor removed by Mr. Spencer Wells, which to the touch exactly resembled a semi-fluctuating ovarian tumor.* I have myself removed a very large fibroid tumor, the history connected with which suggested the idea of an ovarian tumor previous to the operation. The diagnosis of ovarian

* Described in "Obst. Trans.," vol. xi., p. 73.

tumors, of which the contents are chiefly fluid, from fibrous tumors of the uterus is more easy, the presence of fluctuation and other characters giving important diagnostic criteria. (See Ovarian Tumors.)

The following is a tabular statement of cases of fibroid tumor and polypus observed by me at University College Hospital in a period of a little over four years. It will serve to exhibit the more essential particulars connected with the clinical history of these diseases. Of the total number of 96 it will be found that 72 were fibroid tumors and 14 polypi. Of the women who were married, 78 in number, 30 were sterile. It will be observed that in 8 the disease was observed before the age of 26.

FIBROID TUMORS AND FIBROUS POLYPI.

(University College Hospital, 1866-9.)

Age.	Initials.	Married or Single.	No. of Children.	Remarks.
17	A. H.	S.	0	Fibroid tumor in front and to right of uterus.
20	J. G.	M.	1	Fibroid tumor left side of uterus.
20	E. G.	S.		Small mucous polypus of os uteri.
22	E. D.	M.	0	Tumor behind uterus size of egg.
22	B.	M.	1	Fibroid tumor in anterior wall (? anteversion).
23	C.	M.	0	2 miscarriages. Fibroid tumor.
24	A. C.	S.		Fibroid tumor, size egg, in left side of uterus. Dysmenorrhœa.
25	L. D.	M.	2	Fibroid tumor, size pigeon's egg, to front and right of uterus.
26	L. D.	M.	0	Fibroid tumor, size small orange, in anterior wall of uterus.
26	M. M.	M.	0	Married 5 years. Large fibroid tumor on left anterior side of uterus. (Injection with acetic acid.)
27	E. A.	S.		Fibroid tumor, size small foetal head, right side of abdomen.
27	A. T.	S.		Large fibroid tumor. (Incision of cervix.)
27	M. A. G.	M.	1	Fibroid tumor at back of uterus.
27	E. S.	M.	0	Fibroid tumor, size of orange, in anterior wall of uterus.
28	E. L.	M.	4	Fibroid tumor behind uterus, size Maltese orange. Last child 3 years ago.
30	M. A. H.	M.	1	Child 5 years old. Fibroid tumor on right side of uterus.
30	S. H.	M.	1	Fibroid tumor on posterior aspect of uterus.

Fibroid Tumors and Fibrous Polypi—(Continued).

Age.	Initials.	Married or Single.	No. of Children.	Remarks.
30	E. P.	M.	0	Married 11 years. Fibroid tumor of uterus, size of fist.
30	J. O.	M.	7	Fibroid tumor to left of uterus, size of small egg. Uterus or bladder prolapsed.
30	E. D.	M.	0	Married 4 years. Fibroid tumor in front of cervix, size, filbert.
30	A. F.	M.	1	Child 10 years old. Fibroid tumor in anterior right wall of uterus. Cavity of uterus $\frac{3}{4}$ inch too long.
30	D. W.	S.		Fibroid tumor, size orange, to right of uterus.
31	E. N.	M.	1	Child 2 years old. Large hard tumor 6 inches in diameter, on right side of abdomen, apparently uterine. Sound goes in behind it.
31	M. A. S.	M.	0	Very hard tumor behind uterus, size of fist, continuous with uterus. Tumor also above pubes half way to umbilicus.
31	M. B.	S.		Uterus enlarged, anteriorly and to right. Ambiguous swelling also behind it.
32	J. W.	M.	1	Child 15 years old. Two rounded fibroid tumors, one in front and one to left of uterus, connected together. Uterus pressed downwards and retroflexed.
32	S. R.	M.	0	Married 9 years. Small fibroid tumor to right of uterus.
32	C.	M.	0	Married 4 years. Large fibroid tumor, size foetal head, in front of uterus. Sound enters 3 inches.
33	E. W.	M.	5	Last child 6 years old. Fibroid tumor, anterior wall.
33	S. K.	M.	2	Last child 9 years old. Fibroid tumor to right side of uterus.
33	A. H.	M.	0	Married 9 years. Tumor, size pigeon's egg, in right latero-anterior wall. Treated by incision of cervix internally, and use of stem pessary. Pregnancy followed end of 1869.
34	E. M.	M.	7	Last child 1 $\frac{1}{2}$ year. Has passed an egg-shaped hard substance, probably fibroid polypus.
34	C. T.	S.		Enormous fibroid tumor.
35	M. A. T.			Fibroid tumor.
35	A. B.	M.	0	Fibroid tumor right side of uterus.
35	E. R.	M.	7	Retroflexion of uterus, and a soft flattish tumor behind it.
35	L. N.	M.	6	Polypus attached to cervix. Operation.
35	S. B.	M.	8	(?) Fibroid tumor in anterior wall.
35	E. B.	S.		Polypus. Operation by scissors.
35	E. C.	M.	1	Child aged 16. Fibroid tumor growing from back of uterus at junction of cervix and body, size pigeon's egg, flattened.

Fibroid Tumors and Fibrous Polypi—(Continued).

Age.	Initials.	Married or Single.	No. of Children.	Remarks.
35	E. M.	M.	0	Fibroid tumors, anterior and posterior to uterus.
36	J. W.	M.	0	Fibroid tumor right side of uterus.
36	M. A. E.	M.	0	Fibroid tumor externally. Signs of disintegration of uterine polypus.
36	E. L.	M.	4	Fibroid tumor growing from back of uterus low down. Last child $2\frac{1}{2}$ years old.
36	E. M.	M.	3	Last child 10 years old. Fibroid tumor to right of uterus (?).
36	A. G.	M.	0	Married 20 years. General enlargement of uterus, but especially on right side. Cervix also large. Vaginal hyperæsthesia.
36	E. L.	M.	4	Also 5 miscarriages, last 9 years ago. Fibroid tumor right side, size egg. Membranous menstruation and dysmenorrhœa.
36	A.	M.	3	Fibroid tumor on right side and front of uterus.
	J. B.	M.	3	Also 5 miscarriages. Says has had fibroid tumor removed. Uterus still large.
37	A. W.	M.	0	Large fibroid tumor 8 inches oblique vertical diameter. Lies most to right side. Os uteri drawn up.
37	S. C.	M.	0	1 miscarriage 18 years ago. Fibroid tumor, size orange, right side of uterus.
37	W.	M.	3	Last child $3\frac{1}{2}$ years old. Fibroid tumor to right of uterus, pendulous.
37	C.	M.	2	Last child 20 years old. Fibroid tumor to left of uterus.
37	M.	M.	0	Polypoid fibroid tumor, size of fist. Patient died of pyæmia following dilatation of cervix uteri.
38	S. S.	M.	0	Married 16 years. Fibroid tumor size of gravid uterus at 6 months. Sound passes a little to left, and in front of it.
39	C. P.	M.	7	Nodular enlargement to right front of uterus.
39	E. A.	M.	3	Last child 10 years old. Fibroid tumor back of uterus, size of an egg.
40	A. C.	M.	0	Married 4 years. Fibroid tumor behind uterus, size hen's egg.
40	M. W.	M.	0	Large fibroid tumor posterior to uterus. Incised freely.
40	M. D.	M.	0	Very large fibroid tumor of uterus.
40	M. W.	M.	0	Married 18 years. Fibroid tumor, size orange, behind uterus. Retroversion of uterus also.
40	E. F.	M.	0	Married 18 years. Fibroid tumor, size foetal head, round, movable, small pedicle.
40	E. D.	S.		Two large fibroid tumors, anterior part of uterus.

Fibroid Tumors and Fibrous Polypi—(Continued).

Age.	Initials.	Married or Single.	No. of Children.	Remarks.
40	C. L.	M.	1	Child 15 years old. Fibroid tumor, size $1\frac{1}{2}$ inch in diameter behind uterus. Sound passes to left.
40	E. C.	S.	0	Large fibroid tumor.
41	D.	M.		Soft polypus, breaking down (?), clots, etc.
42	E. W.	S.		Large fibroid tumor. (In-Patient.)
42	C. B.	M.	1	Fibroid tumor behind uterus, size of fist. Retroflexion also. Child many years ago.
42	C. S.	M.	2	Last child 16 years. Fibroid tumor back of uterus.
42	E. M.	M.	2	Last child 15 years. Polypus. Operation.
42	C. T.	M.	0	Considerable fibroid tumor to right of uterus.
43	F. Y.	M.	1	Last child 22 years old. 1 miscarriage 5 years after. Fibroid polypus or fibroid tumor. Sound, 4 inches.
43	M. A. F.	M.	3	Last child 20 years old. Fibroid tumor, size foetal head. Uterus also enlarged to left side low down.
44	S. C.	S.		Enormous fibroid tumor, size adult's head, in 3 portions.
44	E. E.	S.		Aggregation of 3 or more large fibroid tumors, altogether exceeding size of foetal head.
44	C. L.	M.	2	Last child 10 months old. Small fibroid tumor in anterior wall of cervix.
45	C. M.			Polypus, size of filbert.
45	S. D.	M.	1	Also 5 miscarriages. Polypus. Removed by écraseur.
46	E. F.	M.	1	Enormous fibroid tumor extending to 3 inches above umbilicus. 8 inches in transverse diameter. Appears to originate in posterior wall of uterus. Sound passes $4\frac{1}{2}$ inches in front of tumor.
46	S. R.	S.		Fibroid tumor size of adult head.
46	B.	M.	0	Married 17 years. Fibroid tumor to left of uterus.
47	E. D.	M.	0	Pelvis filled posteriorly with fibroid enlargement of uterus, growing also upward to a little above umbilicus.
48	E. M.	M.	7	Last child 6 years. Mucous polypus. Operation.
48	C. J.	S.		Small polypus.
48	S.	M.	0	Fibroid enlargement of anterior part of cervix.
48	E. M.	S.		Large fibroid tumor, size of head. (At one time thought to be ovarian.)
49	R. G.	M.	2	Last child 10 years. Large fibroid tumor, size head. Partly in pelvis.
49	M. A. M.	M.	9	Polypus. Operation.

Fibroid Tumors and Fibrous Polypi—(Continued).

Age.	Initials.	Married or single.	No. of Children.	Remarks.
49	M. B.	M.	9	Fibroid tumor, size nut, in front of cervix.
49	J. R.	M.	4	Fibroid tumor, size orange, back of uterus.
50	J. D.	M.	0	Fibroid tumor, size orange, at back of uterus. Prolapsus of the uterus and tumor externally. Uterine canal almost closed.
50	A. S.	M.		Large fibroid tumor as high as umbilicus.
50	E. S.	M.	0	Large fibroid tumor filling pelvis.
50	M. C.	M.	9	Polypus. Removed by scissors.
50	C.	M.	6	Polypus, size pigeon's egg. Operation.
50	F. D.	M.	12	Polypus, size of apple. Operation.
58	M. S.	M.	5	
64	J. N.	M.	7	Fibroid tumor behind uterus.

ETIOLOGY.

No considerable degree of light has been thrown on the question as to the cause of the formation of fibroid growths in the uterine tissues. Although various theories have been put forward to account for their production, these theories are unsupported by facts of a reliable character.

These fibroid growths may be considered to be parts of the uterine tissues which have become isolated in some way from the uterus as a whole, and which take on a quasi-independent mode of growth, being subject, as regards their growth, to certain laws different from those which they obeyed previous to their isolation.

It seems probable that there may be some influence at work acting prejudicially on the nutrition changes in the uterus and leading to the formation of these growths. They certainly have appeared to me to be more liable to occur in individuals whose general health was in a defective state, and in whom, consequently, the nutrition changes in the body generally were and had been habitually moving slowly, languidly, and imperfectly. General weakness implies local weakness, and I have come to the conclusion that the formation of fibroid tumors in the uterus is connected with defective nutritional vigor of the uterus as a whole.

The foregoing explanation was suggested to me in consequence of my having read, some little time since, papers

by Dr. Salisbury, of Cleveland, Ohio, and Dr. Ephraim Cutter, advocating the administration of a diet largely composed of meat in the treatment of cases of fibroid tumor of the uterus, and from the success which in certain well-marked cases under my own observation had followed the adoption of this plan of treatment.

TREATMENT.

The danger to life from fibroid growths in or about the uterus varies very much in different cases, and is connected almost entirely with the severity and intensity of the secondary symptoms. The most considerable source of danger lies in the oft-repeated hæmorrhages, the chronic menorrhagia, leucorrhœa, etc., in bad cases, and in the exhausting effects of these on the constitution of the patient. In themselves these tumors are almost innocuous, but they may, when large, mechanically interfere with important functions of the body, and in that way bring about a fatal result. In one case where the tumor was of considerable size it occasioned an enormous peritoneal dropsy which threatened life. Hence the indications for treatment vary in different cases.

The removal of the tumor should be effected whenever the circumstances are such as to render the removal safe for the patient. Very frequently the tumor can only be extirpated at great risk, and in other cases the connections of the growth with the uterus are such that nothing less than the removal of the entire uterus will accomplish its complete eradication.

The most simple case is that in which there is a fibrous polypus pendulous in the vagina or projecting at the vulva, attached by a pedicle to the interior of the uterus. The only proper treatment in cases of this kind is removal of the polypus. A whipcord ligature was formerly employed for the purpose of cutting through the pedicle of the polypus, the loop being passed round the pedicle and tightened by means of the well-known apparatus of Dr. Gooch. The pressure of the ligature caused the separation of the tumor in a few days, or longer when the pedicle was of considerable thickness. This method of procedure is now fallen into disuse. The knife, the scissors, or the *écraseur* armed with the chain, the wire rope, or a strong wire, are now most largely employed. It has been found that when the

knife or scissors are used the hæmorrhage is either very trifling or very easily controllable; and by the use of the *écraseur* the liability to hæmorrhage is reduced almost to *nil*. The old plan is vastly inferior to the knife, scissors, or *écraseur*; for, unless the pedicle be very small, the whipcord ligature does not cut it through in less than two or three days, during which time the patient is subjected to the great inconvenience of having a semi-putrid mass lying in the vagina, and to the great danger of putrid absorption and consequent pyæmia. It is undoubtedly a matter of great importance to complete the removal of the polypus at once in all cases where it is found feasible.

In the choice of the particular instrument we must be guided by the circumstances of the case. In the case of a polypus with a pedicle the size of a shaft of a feather, it is quite immaterial whether we use the curved scissors, the polyp tome (a long hook, the concave side of which has a cutting edge), or the *écraseur* armed with chain, or wire, or wire rope. Each operator will choose the instrument with the manipulation of which he is best acquainted. There is necessarily more danger of injuring the vagina when the scissors or the knife are used, but even this depends rather on the operator than the instrument. When the pedicle is larger than that above stated, the *écraseur* armed with chain, or wire rope, is the best instrument, inasmuch as thus the operation is more easily effected, and there is less liability to bleeding. This latter method of cutting across the pedicle is applicable also in cases where the scissors or knife could not possibly be used owing to the position of the pedicle. The chain *écraseur* is applied with difficulty when the pedicle is thick, and here the wire, or wire rope (as used in Dr. Braxton Hicks's instrument), is most valuable. The size of the rope must be increased in proportion to the thickness of the pedicle. A modification of Gooch's apparatus, made extremely strong, and capable of being used with any size of the wire, or wire rope, is made by Messrs. Weiss, and has proved very useful in cases of polypus with a very thick pedicle. Dr. Braxton Hicks's instrument has been found effective in many such cases. Meyer's instrument (see Fig. 140), in which a very strong pianoforte wire is employed, is exceedingly good, and I have used it successfully in numerous cases. I have employed the *écraseur* with chain, and also with strands of wire, and the scissors, for the removal of fibrous polypi. If the pedicle is

small, the scissors answer every purpose, but if it is thick the *écraseur* is to be preferred. In the case of a large polypus projecting through the os uteri into the vagina, we may, it must be recollected, have to deal with a partially inverted uterus as well as the polypus. The following case illustrates this point:

A tumor was exhibited by Dr. J. Ogle at the Pathological Society, sent to him by Dr. Slater, of Halifax, Nova Scotia. Dr. Slater had removed it by means of the *écraseur*, and the patient is said to have made a very good recovery. The tumor was referred to Dr. Ogle, Dr. Marion Sims, and myself for a report, the substance of which was as follows: * "The tumor has the shape of a melon; it is $4\frac{1}{2}$ inches in diameter, $2\frac{1}{2}$ in thickness. On one aspect is a surface 1 inch long, ovoid in shape, slightly depressed, and perfectly smooth. This surface was evidently a part of the peritoneal surface of the uterus. The tumor consists of a polypus growing centrally from the interior of the uterus. In separating the tumor, the *écraseur* had cut away the portion of the uterus with which the polypus was connected, which portion formed, in fact, this pedicle of the tumor."

This case is a very unusual one, and indicates the propriety of measuring the cavity of the uterus before cutting through what may appear to be the pedicle. A somewhat similar case is depicted in Fig 130.

The manipulations necessary to remove a polypus of the more ordinary form require a word or two. I have found the best method is to pass a piece of stout whiplcord round the pedicle, to slightly tighten this, and then to drag upon it. This brings the neck of the polypus lower down and better within reach, supposing the scissors or any other cutting instrument to be used. A strong vulsellum forceps answers the same purpose, but not quite so efficiently.

In rare instances uterine fibrous polypi attain an enormous size before they are expelled from the uterine cavity into the vagina; and in such cases, although the tumor is in the vagina, the mere size of the tumor creates a difficulty in reaching the neck of the polypus. Under these circumstances it has been found necessary to remove the tumor piecemeal; to cut away or remove as much of the tumor as can be reached at one operation, and to wait until the re-

* "Trans. of Path. Soc.," vol. xvi., p. 211.

mainder is expelled lower down before again operating. When the mass is very large, it may be necessary to dilate the vagina by means of a caoutchouc bag filled with water or sponge in order to reach the tumor more readily.

When the polypus has been removed, the patient should be kept quiet for a few days, and in most cases it is advisable to give an opiate after the operation. Should hæmorrhage occur after the operation, it will be easily controllable by carefully plugging the vagina.

The next cases we have to consider are those in which the fibrous growth is attached to the interior of the uterus by a pedicle, the growth itself, however, remaining still within the uterus. The os uteri may be found small or tolerably widely open. To Sir J. Y. Simpson is due the merit not only of first pointing out how the diagnosis is to be made where the os is found closed—viz., by artificial dilatation of the os uteri—but also of first practicing the operation of removal of polypi from the interior of the uterus under these circumstances.* The thickness of the pedicle of the polypus may vary; the size of the growth itself also may vary; but as a rule we do not find that very large polypi attached by a narrow pedicle remain long within the uterine cavity; the more usual circumstance being that the os gradually expands and allows the tumor to fall wholly or in part beyond the os uteri. Where the pedicle is narrow, the operation for the removal of such polypi is not difficult, but it is more difficult than when the polypus is lying in the vagina. The removal of a polypus from within the uterus is quite feasible, and it is, in most cases, a proper operation. We may judge roughly of the thickness of the pedicle by endeavoring to twist the growth on its axis. Torsion has been employed in a very few of these cases, but the pedicle is rarely so small as to allow of its being attempted successfully. Knives of various forms have been contrived to cut across the pedicle; such is the polyptome of Professor Simpson—a hook with a knife in the concavity—or the polyptrite of Dr. Aveling (Fig. 177), which is a modification of Simpson's. The instrument is introduced through the os, the pedicle embraced, and thus cut through. Curved scissors may be also employed, but the manipulations necessary are not very easy to perform if the os be narrow or unyielding. The wire or the wire rope

*Original edition of "Obst. Works," vol. i., p. 128.

is best adapted for cutting across the pedicle, the only difficulty being the placing of the rope on the neck of the tumor. In order to enable us to perform the necessary manipulations, the os frequently requires to be artificially dilated. Dr Lombe Atthill* describes and figures a very nicely-conceived method of dilating the cervix in such cases—viz., by the conjoined use of a bundle of tangle tents, by means of which the cervix can be rapidly dilated and the necessary operative proceedings within the cavity of the organ facilitated.

Another class of cases is that in which there is a fibrous growth developed in the substance of the cervix uteri, or one lip of the os uteri. These cases are not very common, but the tumor here situate may attain a great size. The treatment of such cases is identical with that applicable in cases of hypertrophy of the cervix uteri (see p. 137 vol. i).

We next come to the series of cases, respecting the proper treatment of which there is some difference of opinion—viz., those fibrous tumors attached to the uterus by a very broad base, there being a complete absence of anything that can be termed a pedicle. The most manageable of such cases are those in which, although the basis of attachment is broad, yet the tumor itself is of a polypoidal shape. Such a tumor may project partially through the os uteri. The wire-rope *écraseur*, or the wire ligature, may be used to cut across such a tumor, even when tolerably high up. Various methods of treatment have been practiced in cases where there has been no such polypoidal character of the tumor. Amussat incised the os and cervix, and then separated the tumor from the inside of the uterus by a kind of enucleation, or shelling out. This operation, variously modified, has been carried out more recently by others also. Thus Mr. Baker Brown adopted in several cases a procedure† for the removal of such tumors based on the supposition that, when these tumors are partially broken up or disintegrated, as by cutting a piece out of the centre, they have a tendency to perish and separate spontaneously. Dr. Gooch was the first to allude to this, for he held that when a ligature was applied round the neck of a polypus, the part above as well as the part below the ligature

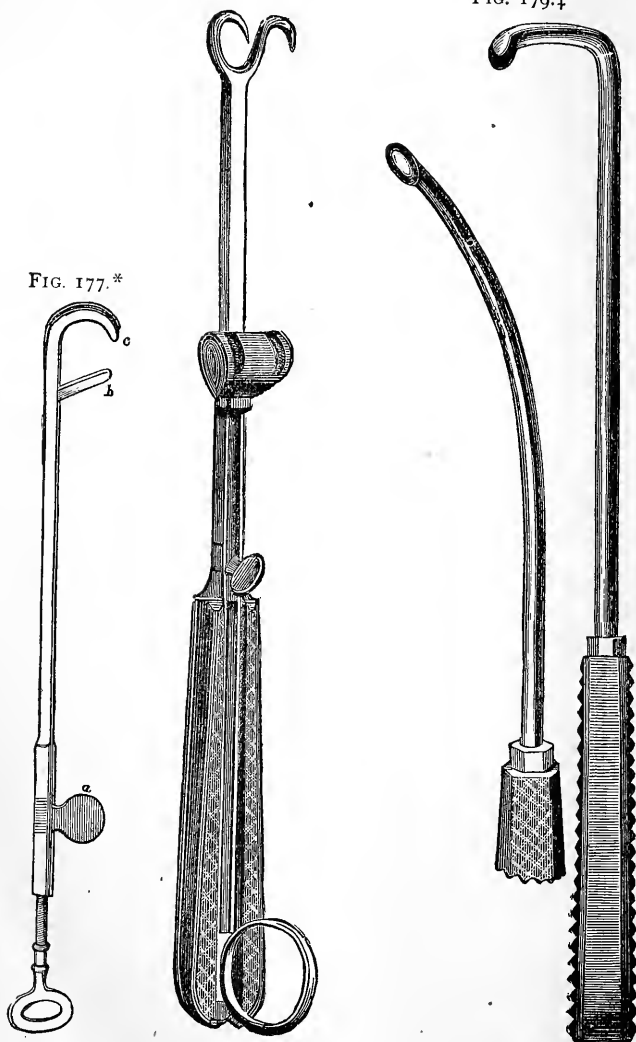
* "Lectures on Diseases of Women."

† "Obst. Trans.," vols. i. and iii.

FIG. 178.†

FIG. 179.‡

FIG. 177.*



* Fig. 177 represents Dr. Aveling's polyptrite.

† Fig. 178 shows Sims's tumor tenaculum hook.

‡ Fig. 179 gives two views of Sims's enucleator.

perished. In some cases, however, the attachment and connection of the tumor with the uterus being considerable, little or no effect would be produced on the remainder by the removal of a part of the tumor.

Dr. Marion Sims * has published reports of several difficult operations, and describes some new valuable instruments for aiding in removing intra-uterine fibroids. One of these (Fig. 178) he terms a tumor-hook, by means of which the tumor can be firmly seized and dragged downward. Another (Fig. 179) is a strong bent hook with a cutting edge; the stem very strong, but of such a material that it can be bent as required. This is a new form of enucleator, and by means of these instruments the tumor is gradually separated from the uterus.

Dr. Washington Atlee says: If hæmorrhage is serious and uncontrollable, the os and cervix must be well dilated so as to get free access. Then establish action of ergot; and when this is done pass in a long probe-pointed bistoury, flatwise, by finger, and carry it till it reaches the upper border of tumor. Uterus is now steadied through abdominal walls by an assistant. The bistoury is then turned, and a bold deep incision made into the tumor by drawing the bistoury downward. It often happens that if hæmorrhage has existed before this incision it ceases afterward. After incision, enucleation should be attempted, and will succeed if tumor is not too massive. It is better to remove, if possible, at the time. Ergot is to be continued afterward.

Professor T. Gaillard Thomas † describes a new instrument, "the serrated scoop," for the detachment of sessile uterine fibroids. When the tumor is a sessile growth not exclusively attached and not pediculated (these two cases requiring other procedures), Dr. Thomas resorts to "avulsion," and he offers an instrument, the "serrated scoop," to perform this. The cervix having been dilated, a powerful vulsellum forceps is applied, and the serrated scoop is employed to detach the growth. Dr. Thomas reports its action as admirable.

Dr. Emmet ‡ finds it very advantageous to use continuous traction half an hour or longer during the operation, so as to ensure contraction of uterus as an aid. By traction

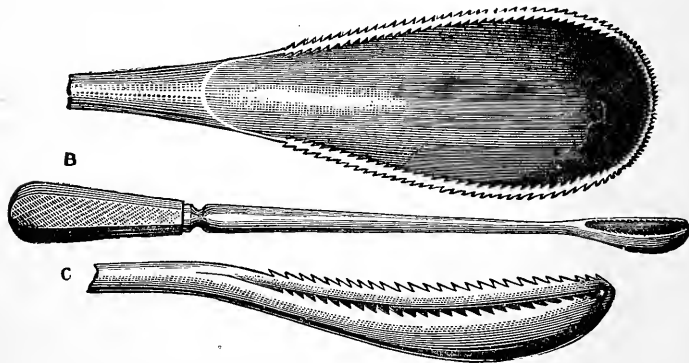
* "On Intra-uterine Fibroids."—*New York Med. Journ.*, April, 1874.

† *Amer. Journ. of Obst.*, vol. x., p. 645.

‡ *Ibid*, New York Obst. Soc., 1874.

there is produced a gradual pedunculation owing to vigorous muscular contraction of uterus, especially round the base of the fibroid. In two cases, weight was seven, and four and a half pounds. When size over a pigeon's egg he controls hæmorrhage and forces tumor out of its bed by frequent use of rectal and intra-uterine suppositories of Squibbs's aqueous extract of ergot (xv.-xx. gr. each). As soon as fibroid projects sufficiently he seizes it with double tenaculum passed up as high on tumor as possible, traction being kept up for as long as one and a half minutes. Hæmorrhage is arrested and uterine contraction excited by hot-water injections, and uterine cavity injected or

FIG. 180. *



painted with Churchill's strong tincture of iodine. Occasionally uterus packed with cotton-wool and glycerine, and vagina tamponed; frequent injections of carbolized warm water invariably. Dr. Emmet finds Thomas's scoop very good; he also describes an enucleator of his own, which can be fastened to the tip of the finger.

The enucleation of interstitial or parietal fibroid tumors is not generally practicable from the internal passages, unless the tumor be situated very low down, or in the substance of the cervix. Thus, in a case related by Dr. Whiteford, a fibroid situated in the anterior wall of the uterus near the cervix was cut into after the cervix had been dilated; the tumor itself seized a few days later and dragged

* Fig. 180 represents Thomas's serrated scoop.

downward and finally removed, the patient recovering. Here the hæmorrhages had been very severe.

All operations on fibrous tumors of the non-polypoidal form and shape are somewhat hazardous; pyæmia, inflammation of the uterus, etc., being always liable to occur. These dangers are often very considerable: the risk of perforating the uterus, the inflammation of the uterus which may be set up, the pyæmic condition liable to arise from the cutting, the tearing, and prolonged manipulations which may be required to carry the operation to a termination,—all these are evils not to be lightly encountered; but the cases reported by various operators show that the operation of removal of large intra-uterine tumors is tolerably safe. It appears to be important to establish a contracting condition of the uterus prior to commencing the operation, and to enucleate and tear away rather than to incise in separating the tumor, and it appears to be advantageous to remove the whole tumor at once when practicable.

Deep incision of the os and cervix alone has been occasionally practiced with the view of lessening or arresting severe and exhausting hæmorrhages. The procedure appears to have been first employed simultaneously by Nélaton, Baker Brown, and M'Clintock. The *rationale* of the efficacy of the operation, which really does appear to be of service in some cases, has been variously given. My explanation is, that the hæmorrhage is arrested because no further accumulation of blood in the uterus occurs. When the os is very small, blood may collect, form a clot which distends the uterus, and by-and-by induce contraction, and then expulsion. Just as is the case in abortion in the early months, the uterus is thus alternately full of blood and empty. The dilatation of the uterus becoming greater, the blood or clot is got rid of, but again accumulates. When the os is incised, the blood oozes away readily, there is no accumulation, no stretching of the uterine wall, and hæmorrhage is lessened. The operation does not succeed in arresting the bleeding in all cases; this is not to be expected. An aperture sufficient to admit the forefinger will be found, in my judgment, adequate; but the incision or dilatation must affect the whole of the cervical canal, including the internal os uteri. The canal so enlarged must be well plugged by lint steeped in glycerine and perchloride of iron. This plug will come away in three or four

days, and the finger must be occasionally used afterward to prevent reclosure.

Removal of Fibroid Tumors by Gastrotomy.—In some cases gastrotomy has been performed, and the fibroid tumor removed by excision or tearing from the uterus. And in some cases also the whole of the uterus, together with the tumor, has been removed after performance of gastrotomy.

When the tumor is sub-peritoneal it is of course more accessible from the peritoneal cavity than when in any other position. If the tumor is a large flat sessile one, having a very broad connection with the uterus, its separation from the uterus is a matter of some difficulty. When, however, the tumor is pedunculated, the separation from the uterus is much more easy. An operation for the removal of fibroid tumors is therefore more likely to prove feasible and successful in the latter than in the former case.

It is found in practice not very easy always to determine before the abdomen is opened how far the tumor admits of easy separation from the uterus. Of late years the removal of fibroid tumors by gastrotomy has been performed in a considerable number of cases with fair success.

In 1878* Mr. Spencer Wells stated that in 24 cases he had removed the tumor, 15 patients dying and 9 recovering. In 21 other cases he had not removed the tumor, but had incised the abdomen, and punctured or incised or removed a part of the tumor, and in only 1 of these cases was the death accelerated by the operation, while many were relieved.

In 1880† Mr. Spencer Wells stated that in the two years preceding he had operated in 10 other cases, antiseptically; out of the 10 cases there were 3 deaths and 7 recoveries. There had been also 5 cases of incision and puncture, all of which recovered.

A very important element in the question is the apparent safety of what may be termed an exploratory operation. It is admittedly difficult to decide without such exploratory operation whether the tumor can be removed. Mr. Spencer Wells's conclusions, given above, show that this exploring operation is practically safe. Dr. Thomas Savage, Mr. K. Thornton, and Mr. Lawson Tait may be mentioned as holding substantially this view as to the safety of the necessary

* *Brit. Med. Journ.*, July 27, 1878.

† *Ibid.*, Sept. 4, 1880.

exploration. Dr. Thomas Savage* was successful in five out of six cases, the ligature being employed in some cases and the clamp in others. The stump may be treated by the clamp, according to Dr. Savage, when it is not very thick and fairly long, while the ligature is best for a short thick stump. His cases were treated antiseptically. The cases most difficult to deal with are those in which the tumor is of the soft variety, and widely attached to the uterus. Hæmorrhage is the principal source of difficulty, not only at the time of the operation, but subsequently; for ligatures do not appear to hold very well on the uterine tissues.

We may next consider the operation of removal of the entire uterus together with the tumor.

Dr. H. R. Storer has collected statistics of the operation of *removal of the whole uterus* with the tumor, relating to 29 cases, including two of his own. The second of Dr. Storer's very interesting papers† on the subject gives the following results: Of the 29 cases, 22 died. The first operation included in the series was one of Dr. Clay's, in the year 1843; the last by Dr. Storer, in 1866. The deaths were due in 6 cases to hæmorrhage, in 8 to shock, in 7 to peritonitis or inflammation; 1 (on the thirteenth day after operation) was the result of accident. The operators were thirteen in number.

The first case performed successfully in this country was that by Dr. Clay of Manchester (included in Dr. Storer's series). The case was that of a single lady: the tumor had been growing for some years, and for the last three or four years it had been growing in such a way as to fill up the pelvic cavity. Finally, the patient had become much emaciated, the tumor filled the pelvis so entirely that the finger could not be passed behind it, and there was not even room for the introduction of a bougie in front; and it being evident that life must be brought to an end by the impediment offered to defæcation and micturition, it was determined to remove the tumor. The entire mass, including the uterus and one of the ovaries, was removed, the uterine cervix being cut across just above the os. Two months subsequently the patient was alive and well.

* "The Treatment of Uterine Myoma by Abdominal Section." Birmingham, 1879.

† *Amer. Journ. of Med. Sci.*, Jan., 1866, and "Trans. of Amer. Med. As.," vol. xvii., 1866.

Hysterectomy, as the operation of the removal of the entire uterus is now generally designated, is a procedure which will, in some cases, be found safer than the removal of the tumor alone. It seems more particularly adapted for cases where the uterine tumor is very large, and widely attached to the uterus. Where the tumor is so situated that it blocks up the pelvis, seriously impeding the performance of the functions of the bladder and rectum, and where it cannot be pushed upward into the abdomen, the operation is indicated. Cases of fibro-cystic tumors of the uterus, in which the process of softening and breaking up is giving rise to dangerous symptoms, are also suitable for hysterectomy. The mere size of the tumor, however, is no guide, for very large fibroid growths sometimes produce comparatively little inconvenience. Thus, in a patient under my care the abdomen was filled by a tumor of ten years' growth, extending up under the false ribs, but she was able to walk about with ease. On the other hand, the increase in weakness, the dyspnœa, and general discomfort may be such as to render it evident that the vital organs are seriously embarrassed in their action; and if the patient be at the same time debilitated by profuse hæmorrhages, the risk of an operation would by comparison be diminished.

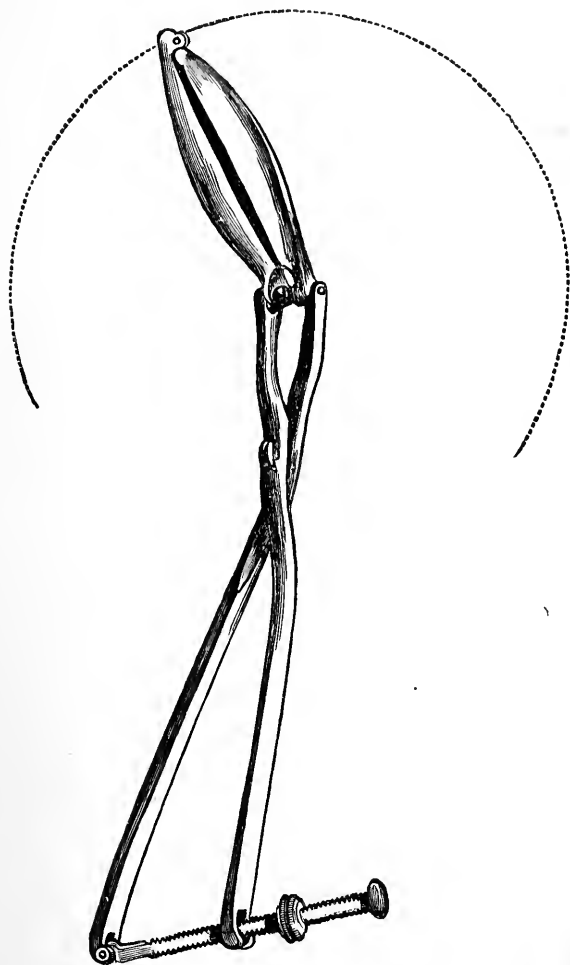
Dr. Storer's "clamp shield" (Fig. 181) is intended to assist in severe operations on the pelvic organs, such as removal of the entire uterus, by lessening the liability to hæmorrhage, and by rendering the action of the *écraseur* in sundering the tissues more certain and definite. The blades of the clamp are four inches long, the edges are serrated, and the blades are closed by a pair of forceps, very strong, and fixed to the blades by a ball-and-socket joint. The arms of the forceps are long, and great compression by this means is possible. The pedicle to be divided can thus be securely held and compressed in a position in which it would be difficult to accomplish the end by any other instrument.

There are various methods of performing hysterectomy for the cure of fibroid tumors of the uterus.

In these cases the removal of the cervix uteri is not a matter of necessity, and it is practicable therefore to separate the uterus with its growth, leaving the cervix, or, at all events, a portion thereof. The separation having been made by the *écraseur*, or scissors, the stump can be brought

to the edge of the abdominal wound and there fixed (Koeberlé), or it can be secured and dropped.

FIG. 181.



Batley's Operation (Oöphorectomy).—Of late years Batley's operation has been had recourse to in certain cases of

fibroid tumors of the uterus, the object being to put an end to ovulation, and consequently to bring also to an end menstruation and hæmorrhages from the uterus. The hæmorrhages produced by uterine fibroid tumors are sometimes very severe, and when they are uncontrollable by other means Battey's operation may be legitimately had recourse to.

Battey's operation is an alternative to hysterectomy. The two operations have practically the same result. There are as yet no sufficient data for deciding on their applicability to particular cases. It would seem to be easier to remove the ovaries than the uterus, and it would appear to be also a safer operation, more especially when the uterus is very large; but the operation has not always been found so easy as it was anticipated to be.

In the 193 cases of complete double oöphorectomy collected by Battey (Inter. Med. Congress, 1881) there were 37 cases in which the operation was done for the relief of uterine fibroids. Out of the 37 cases 15 died and 22 recovered (59 per cent). This percentage of recovery is not very high, and it may be justly urged that many of the patients who died of the operation might not have died of the fibroid tumors.

GENERAL AND PALLIATIVE TREATMENT.

It appears probable that in the future much greater results than any as yet attained will be achieved by what may be termed general nutritional and invigorating treatment of patients suffering from fibroid tumors of the uterus. As yet various medicinal agents in the form of drugs, taken by the stomach, or introduced through the skin by baths, by hypodermic injection, or by vaginal injection, have been chiefly employed, and undoubtedly with a fair amount of success. As I have already stated in speaking of the etiology of these uterine growths, there seems to be reason for supposing that the general nutritional processes are at a low level of activity in such cases.

Thus Dr. Ephraim Cutter,* following up the notion first suggested by Dr. Salisbury, of Cleveland, Ohio, employed animal food largely in the treatment of cases of fibroid tumor. In seven cases a more or less strictly animal

* *Amer. Obst. Journ.*, vol. x., p. 562.

diet was perseveringly carried out, with results of a very decided character in almost all cases. The tumors diminished or disappeared, and the improvement in health was most marked.

If we suppose that these tumors are allowed to grow because the uterus is generally in an atonic, weak condition, it will not be difficult to understand that a stimulating, health-giving dietary will, by better nourishing the uterus, enable it to discharge its functional duties more completely.

Since I became acquainted with Dr. Salisbury's views, the inquiries I have made of patients as to their habits in regard to taking meat as an article of diet have convinced me that there is here ground to work upon in regard to therapeutic influence on the growth of fibroid uterine tumors. And I have in several cases observed that much benefit has accrued from adopting a very liberal animal diet in such cases. It is true that in these cases other measures were employed at the same time (drugs internally administered, etc.) which might have been credited with some part of the beneficial results observed. Yet my opinion is that the meat had a very decidedly good effect.

[Fibroid tumors of the uterus are seldom dangerous if they do not give rise to excessive hæmorrhages. But they often produce great discomfort and even severe suffering by merely mechanical pressure on important organs. For all metro-rhagies ergotine hypodermically is a valuable remedy. The following is Squibbs's formula:

℞	Ext. ergot (Squibbs's).....	gr. 60
	Aq. pura.....	℥. 250
	Ft. solutio.....	
	Filter, and add water through filter to wash residue, q. s. to make.....	℥. 300
	Each minim represents <i>one grain</i> of ergot.	

M. Tauret, pharmacist of Paris, has lately discovered a new alkaloid of ergot which he calls ergotinine. He prepares a translucent solution of it for hypodermic use, given in from two to ten drops. In the maximum dose it sometimes produces nausea and dizziness. Five or six drops will ordinarily suffice, to be repeated in two or three hours if necessary. The Academy of Sciences have awarded M. Tauret a prize for his discovery. My father has used it and thinks highly of it.

Hildebrandt introduced the hypodermic use of ergotine

for fibroids ten or twelve years ago, and where the tumors are interstitial some marvellous cures have been made. I have seen some instances of its success, one in a lady from South America who was sent to us by Prof. Louis A. Sayre in 1875. She had a uterine fibroid larger than the pregnant uterus at five months. In the course of twelve months it had nearly disappeared and she subsequently gave birth to two children, eighteen months between them.

Prof. Byford has had greater success with the ergot treatment of fibroids than any one else in our country. I must refer the reader to the "Transactions of the American Gynæcological Society" (vol. i., p. 168) for his admirable and exhaustive paper. But ergot and all other methods of medication often fail, and we are obliged at last to resort to surgical means to arrest hæmorrhage when life is endangered.

If the tumor project into the cavity of the uterus, and is small, that is from the size of a walnut to that of a coconut, and if the cervical canal can be sufficiently dilated, it is practicable to remove it safely per vias naturales, as we do an ordinary fibroid polypus.

But if the tumor be interstitial and of considerable size, too large to be removed per vaginam, and if the hæmorrhage be alarming, then it is a question whether we perform Battey's operation, or extirpate the uterus and its appendages.

Battey's operation arrests the hæmorrhages and atrophies the fibroid. And a short time ago it was thought that it would supersede all other surgical means for this purpose. Lawson Tait has performed Battey's operation oftener than any one else for the relief of bleeding fibroids, but he lost five cases out of twenty-five, 20 per cent.

The extirpation of the uterus and fibroid by abdominal section by previous operators yielded a mortality of 45 per cent. Hence it was reasonably supposed that Battey's operation would supplant entirely that of hysterectomy.

Knowsely Thornton said three years ago, that hysterectomy by abdominal section would soon be as successful as ovariectomy.

Keith, Bantock, and Hégar have lately operated thirty-nine times with but three deaths amongst them, which is a mortality of only 7.65 per cent. Dr. Bantock is my authority for this statement. If the success of these three sur-

geons collectively is an omen of the future, then is Mr. Knowsely Thornton's prediction already fulfilled.

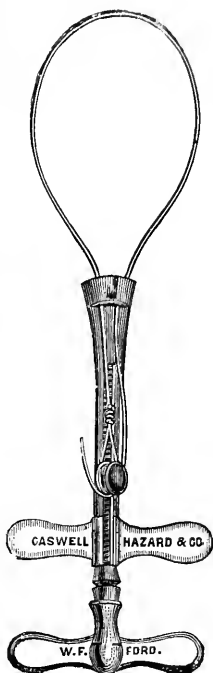
Keith and Bantock make a pedicle of the cervix, when it can be done, using Koeberlé's wire "serre-nœud" to fix it in the lower angle of the abdominal section. This was done long ago by Péan and others, but without the success now achieved by Keith and Bantock.

Hégar and Kattenbach effect the same purpose with an elastic ligature five millimetres thick. Kept at full stretch it is carried round the cervix and firmly knotted. The cervix is amputated above, and the peritoneum is neatly adjusted around the pedicle below the india-rubber ligature. The abdominal incision is closed in the usual manner, till within an inch of the pedicle, where the edges of the peritoneum are alone united, leaving the abdominal parietes at that point open. Thus there is a space surrounding the pedicle which is covered over with peritoneum alone. The end of the pedicle is cauterized, and the open space around and above it is rendered aseptic by a 5 per cent solution of chloride of zinc; and dry cotton-wool of 2 per cent is used as a dressing.

But suppose all ordinary medication has failed to arrest the bleeding from a fibroid, and suppose surgical interference to be impracticable or unjustifiable on account of the exhausted state of the patient. What then are we to do? As I have had in conjunction with my father a case of this sort I here give a brief history of it.

Mrs. B——, age 40, married twice, last time a year ago (June, 1879). Four children by first marriage. Menses regular, but very free indeed for several years past, and more so since second marriage. Periods last five to seven days. Has a profuse serous flow a day before the period begins, and for ten days after it ceases. No pain with flow; great debility and prostration. Is pale and bloodless and thin, all from loss of blood. Ten years ago noticed a small lump

FIG. 182.*



* Fig. 182 represents Koeberlé's "serre-nœud." (Reduced about one-half.)

in right hypogastrium, which gradually enlarged till at the end of three years it was very noticeable. The abdomen was about the size as at the fifth or sixth month of pregnancy. The uterus was a large globular mass, filling the hypogastrium and pelvis, extending from the insertion of the vagina up to the umbilicus. It was symmetrical in form and very hard to the touch. The intra-vaginal portion of the cervix was almost obliterated, the cervix appearing to be wholly lost in the great fibroid mass. The canal was very narrow and the cervix indurated. We attempted to dilate the canal for the purpose of exploring the cavity of the uterus, which measured nine inches; but one very small sponge tent produced such continual rigors, great constitutional disturbance, frequent pulse, and exalted temperature, that we were obliged to remove the tent, give anodynes freely and leave the patient without further treatment. Three or four days passed before the inflammatory symptoms subsided. The loss of blood had been so profuse for a long time, and her system was so exhausted that we could not resort to any further surgical means for her relief. All constitutional remedies, such as ergot (hypodermically and by mouth both) had utterly failed to control the hæmorrhage. She was so weak and exhausted we did not dare to perform Battey's operation or to remove the uterus itself, and we had failed to produce any effect upon the tumor by the natural channels.

About this time (1880) Dr. Salisbury, of Cleveland, Ohio, and his follower, Dr. Ephraim Cutter, were calling the attention of the profession to the treatment of fibroid tumors of the uterus by the meat diet. They were very enthusiastic on the subject and claimed great success with it.

Looking upon the case above described as absolutely incurable by surgical means, we recommended her to the care of Drs. Salisbury and Cutter. Last October (1882) we saw her after she had been under the treatment of these gentlemen for two years. The tumor had diminished more than half in size, menstruation was perfectly normal and regular, lasting from three to four days. She was the picture of health, face full and cheeks rosy, and was able to walk several miles a day. She informed me that she ate little besides beef three times a day. Dr. Salisbury claims to have cured a number of cases which were seemingly as hopeless as this one when turned over to his care. I feel satisfied that Salisbury's plan of treatment by animal diet

is a great advance, and will soon come into general use. This treatment is now attracting so much attention, not only in fibroids but in other abnormal conditions of the system, that I deem it important to give here his specific directions for carrying out the treatment, and in his own words.

I. Drinks.—Drink a pint of hot water, one to two hours before each meal and half an hour before retiring. From fifteen to thirty minutes should be taken for drinking this water, so as not to distend the stomach to make it feel uncomfortable. The object of the hot water is to wash out a dirty, yeasty, slimy, sour stomach before eating and sleeping. The water should be drunk long enough before each meal to allow it time to get out of the stomach before the food enters. When thirsty, between two hours after a meal and one hour before the next, drink hot water, clear tea, or crust coffee. Take no other drinks of any kind between meals. At meals drink one cup (8 ounces) of clear tea.

II. Food.—Eat the muscle pulp of lean beef made into cakes and nicely broiled. This pulp should be as free as possible from connective or glue tissue, fat, and cartilage. The "*American chopper*" answers very well for separating the connective tissue: this being driven down in front of the knife on to the bottom board. In chopping the beef, it should not be stirred up in the chopper, but the muscle pulp should be scraped off with a spoon at intervals during the chopping.

At the end of the chopping the fibrous tissue of the meat all lies on the bottom board of the chopper. This may be utilized as soup meat for well people. Previous to chopping, the fat, bone, and tendons should all be cut away, and the lean muscle cut up in pieces an inch or two square. Steaks through the centre of the round are the richest and best for this purpose. Beef should be used from well-fatted animals that are from four to six years old. The pulp should not be pressed too firmly together before broiling, or it will taste livery. Simply press it sufficiently so that it will hold together. Make the cakes from half an inch to an inch thick. Broil slowly and moderately well over a fire free from blaze and smoke. When cooked, put it in a hot plate and season to taste with butter, pepper, and salt. Either Worcestershire, Halford, or Chutney sauce may be used on meats, if desired. A little celery may be eaten at each meal.

Avoid all other foods and condiments. This rigid diet should be kept up till the fibrous growths have either mostly or entirely disappeared; when bread toast, boiled rice and cracked wheat may be gradually brought into the diet list. Other meats may now begin to be taken, such as lamb, mutton, game, fish, and whole steaks. If the fibrous growths begin to increase again, come at once square down to the muscle pulp of beef, and continue it until all traces of the growth have disappeared. Then begin to bring in gradually, as before, other foods, moving along watchfully and carefully, keeping the stomach clean and the urine standing at 1.015 in density, and the appetite good. It takes from one to three years' rigid work to remove fibrous diseases thoroughly, and to break up all the diseased appetites, cravings, and desires that have been at the bottom of the conspiracy in producing such grave pathological states. The patient will lose in weight, from the loss of fat and connective tissue, for the first few months. This, however, is a favorable indication, and need excite no uneasiness. After a while the gain in blood, muscle, bone, and nerve will be greater than the shrinkage; when a gain in weight will take place. This gain will be slow, but it will be all the time advancing steadily in the direction toward the healthy state. The physician and patient must be both satisfied with the steady improvement, even if it is slow. It is the only way open to a perfect cure and to perfect health.

III. Meals.—The meals should be taken at regular intervals, and it is better to eat alone, or only with those who are living on the same diet. All temptation should, as much as possible, be removed from the patient. If three meals a day are not sufficient to satisfy hunger, the patient may be allowed a nice piece of broiled steak between breakfast and dinner, and dinner and supper. These extra meals should be taken at fixed and regular intervals.

If care is taken in following out this plan of diet, it will not be long before the system gets in good order, the digestion and assimilation will go on nicely, and the patient will eat largely and with great relish. You will often be assured by the patient that there is no food so nice as a good cake of the well-broiled *muscle pulp* of beef. The appetite becomes so good, and the relish for the beef is so great, that you need not be surprised to see anywhere from one to two pounds eaten at each meal. The patient should

be cautioned to never eat on a tired stomach. Rest one hour before and after each meal; eat slowly and masticate the food well.]

The general treatment of cases of this kind should then consist—(1) in the very careful nourishing of the patient by animal food, given at first in small quantities at a time, as a rule, but very frequently; after a time the meals may be less often but more in quantity; (2) in the employment of baths, rubbings and friction of the skin, whereby the circulation may be quickened, together with moderate outdoor exercise.

Ergot has been extensively administered during the last few years hypodermically. Hildebrandt's method* has been most generally employed. It consists in taking up a firm fold of skin, inserting the canula perpendicularly into the crest of the fold to the depth of one half the length of the canula, so that the fluid may enter the thick subcutaneous tissue. Hildebrandt injected about $2\frac{1}{2}$ grains of aqueous extract of ergot (Wornich's), dissolved in water, and a minute quantity of glycerine added. In one particular case related, fifty injections were made between May 22 and Aug. 1. Dr. John Williams uses a solution of sclerotic acid. Hildebrandt's conclusions are, that the treatment is most likely to be beneficial when the tumor is well provided with muscular tissue, when it is sub-mucous, when the walls of the uterus are sound, capable of vigorous contraction, and no inflammatory action present. His results in favorable cases were very encouraging.

My own experience as to the effects of ergot applies to its internal administration. In 1869 I saw, with Dr. Brunton, a lady æt. 47, who had then a tumor, well marked, and which continued to grow for some time afterward, occasioning very great loss of blood periodically. In this case Dr. Brunton subsequently employed ergot given regularly and freely at the menstrual periods, and the result was the subsidence of the tumor.† I have known of other cases also when very decided benefit resulted from the use of ergot.

On the whole, it appears that ergot has in many cases a great power in controlling or diminishing the hæmorrhage and leucorrhœa in cases of fibroid tumors; that in a smaller number of cases it is capable of effecting a decided diminu-

* See his papers in *Amer. Journ. of Obst.* 1875, vol. vii., p. 529.

† Case reported by Dr. Brunton, "*Obst. Trans.*," vol. xiii., p. 282.

tion in the size of the tumors, and in a few cases of procuring its disappearance, while in other cases its effects are not very obvious. The remedy could only be expected to have a good effect when used for a considerable time. Thus, it might be used daily, for a week together, every other week, and this plan continued for three or four months.

The Kreuznach Water Treatment.—The waters of the baths of Kreuznach have obtained great celebrity in the treatment of cases of fibroid tumors of the uterus.

The course of treatment adopted at Kreuznach* consists in employment of baths of the Kreuznach water, to which a certain quantity of the "mutterlauge" is added, so as to make them stronger. A medium bath contains fifteen pounds of fixed elements, seven of chloride of sodium, seven of chloride of calcium, two ounces of bromide of sodium, and five ounces of chloride of lithia, with other elements in minute quantities. About forty baths are considered the full course. At the same time compresses, douches, and injections into the vagina and rectum are employed. The treatment can be conducted at home by means of water sent out from Bad Kreuznach.

It is a matter of surmise which of the ingredients is the more potent in the action of Kreuznach water. It is generally considered that the bromide is the more important. In practice I have for some years largely employed the bromide of potassium, giving for months together twice a day (10–15 grain doses), and have seen cases in which it has appeared to be of great service. It is very difficult to assign its precise merit, however, to any one therapeutic agent, inasmuch as generally two or three are used concurrently. And thus in certain well-marked cases of improvement under treatment which I could adduce, it is not possible to say positively whether the medicine or the diet should be credited with the good result.

The Woodhall Spa waters (Lincolnshire) contain bromine in even greater quantity than those of Kreuznach. And, so far as can be gathered from recorded cases, those waters have an action resembling Kreuznach water on fibroid uterine tumors.

Treatment by Electrolysis.—Drs. Gilman Kimball, of Lowell, and Cutter, of Boston, U. S. A., have operated on thirty-

* See Dr. Engelmann's account. Paper read at Obst. Society of Edinburgh.

six cases of fibroid tumor of the uterus, of considerable size, by electrolysis. Dr. Thomas reported on the cases to the New York Obstetrical Society in November, 1876.* The electrodes were stylets seven and a half inches long, including the handle, and gutter-shaped; one electrode introduced above the umbilicus, the other below it, to depth of four inches. The current kept up for fifteen minutes, the skin protected by covering the upper part of the stylet with non-conducting material. The electrodes next introduced one on each side of umbilicus: great watery discharge always produced by the operation and much urine secreted. Dr. Thomas analyzes the results, but I have made the following analysis as giving the results more succinctly: In two cases the tumors proved to be malignant; in one the operation was incomplete; in 17 the tumor diminished decidedly, the diminution being in a few cases great; in three cases (very large tumors) the tumor disappeared; in five cases arrest of growth occurred; in six no effect observed; in two cases the patient died.

Various Other Remedies.—Mercurials have been employed in small doses, continuously in some cases. Probably they act best in conjunction with bromine in some form or other. Dr. Tanner found mercury the only remedy capable of arresting hæmorrhage in one case. Chloride of calcium was recommended by Dr. Rigby. Dr. M'Clintock reported favorably of its effects (30-40 drops of the solution of the Dub. Phar. three times a day).

Various secondary symptoms due to fibroid tumors often require attention. In some cases micturition is difficult or impossible without the aid of the catheter. In some cases the tumor has to be pushed up bodily out of the pelvis to relieve the patient of the pressure, and to allow of the action of the bowels; but this elevation of the tumor is not always practicable. Again, during parturition pendulous fibroids may come down into the pelvis, and have to be pushed backward to allow of delivery. In cases where the pelvis is blocked up, great care is required to procure daily action of the bowels. Pain is a symptom very often requiring attention. I have known cases where the suffering was so intense and continuous that the patient was on the verge of despair. I recollect one case in particular, where pain was so violent and so difficult to relieve, that an oper-

* *Amer. Journ. of Obst.*, vol. x., p. 117.

ation was on the point of being performed, when it suddenly abated. Bromide of potash and opium together have the best effect in such cases. It is a good plan in cases where pain is considerable to cover the abdomen with iodine paint and repeat it from time to time.

Dr. W. H. Baker,* of Harvard University, has recently published a valuable paper on "Drainage in Removal of Sub-mucous Fibroids." He recites six cases. The tumors were all fibro-myomata; all were attached to the uterus over the greater part of the half of their surface; all were in the body of the uterus, the os internum as yet undilated; in all the prominent symptom was excessive menstruation or hæmorrhage; age 32 to 42. The method adopted was, first, dilatation by sponge, for twelve to sixteen hours; then introduction of laminaria tents and further dilatation, followed immediately by enucleation after the method of Emmet, the tumor being dragged out of its bed and removal aided by scissors, Thomas's scoop, etc. The peculiarity is in the subsequent treatment. Dr. Baker inserts a tube into the cervix two and a quarter inches long, with internal diameter of three quarters of an inch. This has slightly flanged edges below, and it is fastened to the os by wire, there being small holes to allow the wire to pass through. Latterly the drainage tube was perforated laterally and its upper extremity bevelled off. Dr. Baker has found this method of drainage most valuable, for there is after the operation a liability for the uterus to become flexed and thus to produce retention of decomposing fluids in its interior, followed by septic poisoning; the uterus being in a state of atony at the time furthers this effect. This method of drainage is limited to intra-uterine tumors, and is "obviously non-essential in some of these."

* Reprinted from "Archives of Med." New York: Putnam's Sons, 1882.

CHAPTER XLIII.

CANCER OF THE UTERUS, VAGINA, ETC.

Cancer a frequent Disease of the Generative Organs in Women—Etiology considered—Influence of Age—Influence of Child-bearing and Marriage—Statistics—Antecedent Conditions—Laceration of the Cervix Uteri—Its Hereditary Character—Mr. Moore's Opinions on Varieties of Cancer of the Uterus—Medullary—Cauliflower Excrescence—Part of Uterus usually affected—Extension to other parts—Symptoms—Sarcoma of the Uterus—Cancer of Vagina—Duration and Fatality of the Disease.

DIAGNOSIS.—In early Stage—In advanced Stage—By aid of Speculum.

TREATMENT.—Excision of the Cervix in Cauliflower Excrescence—Mode of Operating—Treatment of other Forms of Cancer of the Cervix—Excision—Removal of entire Uterus by Freund's Procedure—Bromine—Palliative Measures: To check Hæmorrhage and Discharges; to relieve Pain; to support the Patient—The Prognosis—Treatment of Cancer of the Vagina or Bladder—Association of Pregnancy with Carcinoma of the Uterus.

Cancer of the generative organs is undoubtedly the most formidable affection to which women are liable. Cancer, which experience has led us to regard justly with fear and apprehension, appears to attack women more than men, but in women the generative organs—the breast or the uterus—are a very favorite seat. In about 23 per cent of all cases of cancer, the location is the uterus or the breast (uterus 18·5 per cent, breast 4·3 per cent, Virchow; uterus 15 per cent, breast 8·5 per cent, Marc d'Espine).

Influence of Age.—Cases of uterine cancer are noticed, for the most part, after the age of 30. The larger number of cases occur between the age of 40 and 50, and about one per cent of recorded cases occurred after the age of 70.

The following is a table given by Dr. West,* as containing the results of his own observations combined with those of Lebert, Kiwisch, Scanzoni, and Chiari:

Between 25 and 30 years.....	26 cases
“ 30 “ 40 “	120 “
“ 40 “ 50 “	183 “
“ 50 “ 60 “	73 “
“ 60 “ 70 “	35 “
Above 70 “	5 “
Total.....	442

* “Lectures on the Diseases of Women,” 2d ed., p. 368.

The following is an account of 54 cases observed by myself at University College Hospital, given in quinquennial periods:

Between 28 and 30 years.....	2 cases
“ 31 “ 35 “	12 “
“ 36 “ 40 “	8 “
“ 41 “ 45 “	16 “
“ 46 “ 50 “	8 “
“ 51 “ 55 “	4 “
“ 56 “ 58 “	3 “
Total.....	53

The earliest instance I have seen was a case in private practice, where the disease began at the age of 23. The patient married at the age of 15, and had had two children, the youngest æt. five.

In 156 cases reported on by Mr. Sibley * the average age at which the disease began was 43·28.

Before the age of 25, then, uterine cancer is a rare disease. Dr. Churchill states that he has witnessed a fatal case in a woman under 25; and the same authority refers to two other cases—one by Wigand, in which the uterus was affected with scirrhus at the age of 14; and another by Mr. Carmichael, fatal at the age of 21. In Madame Boivin's table, 12 cases out of 409 are set down as under 20 years of age; but these cases of early cancer related by Madame Boivin are justly objected to, as probably not being cases of cancer at all. The youngest of Scanzoni's cases was 23 years old.

The opinion of Dr. Walshe, of Sir J. Paget, and others, is that the proclivity to cancer generally increases steadily and progressively with the age. It is to be remarked that, after the age of 50, the frequency of *cancer uteri* appears to diminish; but the diminution is rather apparent than real, for it must be remembered that the proportion of individuals living, and therefore available, so to speak, for cancer, every year becomes less and less.

Influence of Marriage and Child-bearing.—It was formerly a disputed point whether uterine cancer is most common in women who have had children, or in those who have had none. Dr. West says,† “Though ample proof to the contrary has been long since adduced, we still find it some-

* “Med. Chir. Trans.,” vol. xlii.

† *Op. cit.*, 2d ed., p. 370.

times asserted that single women and those who have had no children are most liable to be attacked with cancer. The truth appears to be the direct reverse of this statement. . . ." Scanzoni gives it as his opinion that, in a certain degree, sterility predisposes to the disease. The statistics of these two observers give the following results: Of 131 married women affected with cancer, 8 were sterile (West). Of 108 married women affected with cancer, 36 were sterile (Scanzoni). All, however, including Scanzoni, agree in considering that, in women who have had *many* children uterine cancer is more likely to occur, and this accords with my own experience. Thus, in Dr. West's 123 cases of cancer, in which the marriage was fruitful, the average number of pregnancies per case amounted to 6.8. In Scanzoni's 72 cases, the average number of pregnancies per case was 7.01. The average number of children per marriage in this country, given by Dr. West, is 4.2—an average certainly much exceeded in the cases of cancer uteri recorded by him, and still more so in the cases of Scanzoni. Mr. Sibley's researches, also the statistics of Dr. Tanner,* tend in the same direction.

The influence of *marriage* seems important. The following are particulars of 54 hospital cases observed by myself: thus—

Of five cases there is no note taken as to whether married or not.

In 48 cases the patients were married.

In one case the patient was single (but had had a child).

In these cases, then, it is remarkable that in 49 cases where it is known whether the patient had been married or not, 48 were married, and the single exception was a patient who, though not legally married, had been married in the sexual sense. This would seem to give reason for the belief that sexual intercourse is not without influence in the etiology of uterine cancer.

Then with respect to the influence of child-bearing, the analysis of my 54 cases gave the following results:

In the 40 women who had had children, the total number of children was 179, or about $4\frac{1}{2}$ children to each, very little in excess of the average number of children in non-cancerous cases, as estimated by Dr. West.

* "A Clinical Report on Cancer of the Female Sexual Organs." By T. H. Tanner, M.D., London, 1863.

1 patient had had 12 children,

1 " " 10 "

6 " " 9 "

2 " " 8 "

2 " " 7 "

etc., making a total of 179.

There had been 10 miscarriages.

Seven patients had had *no* children. Of three patients who had been married there is no note as to children or not.

So far as these cases go they would seem to indicate sexual intercourse rather than excessive fertility as a predisposition to uterine cancer.

I have recently looked over my notes of cases observed in private practice during six years (1873-79), 27 in number. There is not one of the 27 in which the patient was single. There are five cases in which it is not stated whether there had been children or not, but in all the other cases child-birth had occurred, two cases excepted, and in one of these latter cases there had been miscarriages.

Laceration of the Cervix Uteri as a Cause of Uterine Cancer.—Observations made by Dr. Emmet of New York, and other eminent American practitioners, tend to show that malignant growths are not seldom associated with lacerations of the cervix uteri. This is a matter of very extreme interest. In this country the subject of lacerations of the uterine cervix is only beginning to attract attention, but in America the lesion has been considered practically important for some time. And it has been found that such lacerations do give rise, or at all events are antecedent to, the occurrence of malignant growths at the cervix uteri.

Speaking of epithelioma, Dr. Emmet * says: "The growth follows an effort of nature to repair or remove the consequences of an injury received in child-birth." Dr. Emmet states that he has never known a woman to have any form of epithelial cancer of the uterus unless she had at some time been impregnated. Thus, of 53 cases of malignant disease observed by him in private practice, 51 had all borne a number of children; the other two had suffered from effects of criminal abortion in early life and remained sterile. The facts related by him concerning 60 hospital patients are almost as striking. Dr. Emmet relates in full a remarkable case observed seven years before, which first made him acquainted with the influence of these lacerations in the production of malignant uterine growths. It results

* *Op. cit.*, p 493

from Dr. Emmet's observations that uterine cancer is almost never observed unless in cases where child-birth has occurred or sexual intercourse, with or without conception, had happened. These observations of Dr. Emmet's are confirmatory of the conclusion to which I had myself arrived from facts observed in my own practice as to the influence of sexual intercourse in the etiology of uterine cancer (see page 257).

Dr. W. H. Baker,* of Harvard University, U. S., is a firm believer in the theory of the local origin of cancer. Some cases show a constitutionality from the first, but in the large majority of cases of cancer some local irritation, oftentimes long continued, is the starting-point of the disease. "I know of no more frequent cause of cancer of the cervix uteri than the persistent irritation to which the everted lips of a lacerated cervix are exposed." He would perform Emmet's operation for the repair of such a condition in every instance when the rupture is sufficient to allow any eversion.

Other Antecedent Conditions.—Mr. Moore, in a philosophical essay on the "Antecedent Conditions of Cancer,"† adduced important facts. The evidence, in Mr. Moore's opinion, shows that "the very large majority of cancers spring up without traceable hereditary influence, and the very large majority of such instances of the disease, which are thus independent of the ancestry of the person affected, are also not transmitted to any of the offspring. For three patients affected with cancer, 97 parents (who yet have a cancerous relative) and 97 children go free." The disease is primarily a local one. Mr. Moore does not deny altogether that the disease is hereditary, but he believes that it is only rarely so. That there is a previous diathetic condition, or a disposition in the economy, which may determine the first formation of the tumor, Mr. Moore also admits, in accounting for those cases where cancer has appeared to originate from a blow. He quotes Broca, who says, in reference to such cases, that "here we must admit the existence of a previous disposition in the economy before the local accident which determined the formation of the tumor; the diathesis hovered as it were over the organism." He expresses his concurrence in these views.

Mr. Moore argues, further, that the disease can always be traced to a period when but one tumor existed; that the spread of the disease is a mechanical one, its apparent re-

* "Treatment of Cancer of the Uterus."—*Amer. Journ. of Obst.*, April, 1882.

† *Brit. Med. Journ.*, August 20, 1865.

appearance in the same place after removal being probably due to an imperfect operation; that its appearance in internal organs after complete removal of the primary tumor does not prove that it originated of itself in such internal organs *after* the operation; that while in a few instances the hereditary character of the disease is well marked, in the great proportion of cases it is a personal disease, and not capable of transmission.

The arguments used by Mr. Moore are worthy of attentive consideration. It appears evident that the hereditary character of the disease is not so commonly substantiated as has been supposed, while in a few instances (three per cent of the cases) this hereditariness was extremely well marked. When hereditary, the disease appears to gather intensity as it descends, for it appears earlier in the daughter than it did in the mother, earlier still in the grandchild. Mr. Moore's belief that cancer for the most part originates in strong rather than tainted constitutions may be true in one sense of the word. The individual may be *apparently* strong and healthy, but not strong and healthy *quoad* the liability to this disease. It is quite true that at present we are unable to point out what it is that distinguishes an individual about to develop cancer from another who is to be free from it; but the advance of medical science will, it is to be hoped, clear up this important point. One thing is evident, the great necessity for the early detection of the disease, facts being in favor of the idea that if we could more frequently be made aware of its existence, there might be a fair chance of doing the patient much good in a considerable proportion of cases.*

* With respect to the effect of removal of a cancerous tumor on the duration of life, Mr. Birkett's facts are of great interest. The seat of the cancer was the breast. Of 150 patients who had it removed there survived—

Under 1 year.....	8	Above 10 years.....	2
Over 1 ".....	24	" 11 ".....	2
" 2 ".....	38	" 12 ".....	1
" 3 ".....	17	" 13 ".....	1
" 4 ".....	21	" 14 ".....	2
" 5 ".....	7	" 15 ".....	1
" 6 ".....	5	About 23 ".....	1
" 7 ".....	10	" 29 ".....	1
" 8 ".....	4	" 32 ".....	1
" 9 ".....	4		

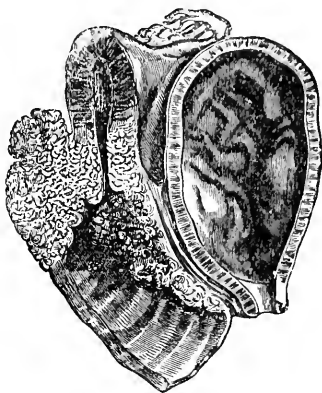
Whereas of 100 patients not operated on there died within first year, 14; survived 10 years, 3; of these, 2 about 26 years; the average duration of life being about $3\frac{1}{2}$ years.—*Brit. Med. Journ.*, Sept. 29, 1866.

The antecedent condition of system in the cases which have fallen under my own notice has been various. In some, the individual was in apparently good health, but in many the state of things was the reverse. Prolonged anxiety, depression of the general health, and an evidently low state of vital power, I have certainly been induced to regard as rather frequent antecedent conditions. Great debility and prostration from prolonged and excessive lactation has been apparently connected with the occurrence of uterine cancer in several instances under my own observation. But the facts and statistics before related as to the influence of the married state, the effects of intercourse, and the effects of lacerations or injuries of the cervix uteri due to child-birth are of exceeding importance, and further inquiries will doubtless elicit much additional valuable information on this very interesting subject.

In reference to the influence of *heredity* Dr. Fordyce Barker† of New York found that in only 7.3 per cent of 487 cases of uterine cancer was the hereditary influence proved to exist.

Varieties of Cancer.—The form of cancer usually witnessed in the uterus is the medullary cancer. The “epithelial” comes next in order of frequency.‡ The medullary form of cancer attacks, in common with other forms of cancer, the lower part of the uterus, first, in by far the majority of cases. The epithelial form is witnessed in the superficial and exposed portion of the cervix uteri, and it has been known ever since the name was given to it by Dr. John Clarke, as the “cauliflower excrescence of the os uteri.” It does

FIG. 183.*



* Fig. 183 (from Martin's Atlas) represents the uterus and vagina affected with cancer.

† New York Academy of Medicine, Feb. 17, 1879.

‡ An excellent account of the *post-mortem* appearances in 58 cases of uterine cancer, by Mr. Henry Arnott, will be found in the "Pat'h. Trans.," for 1870.

not appear that, so far as the anatomical part of the question is concerned, the two diseases differ essentially; we find in both, on microscopic examination, cells and formations, which equally indicates the presence of cancer. The difference in the physical characters, evident to the touch and the unassisted eye, in the two varieties of the disease, appears to depend on the different anatomical arrangement of the tissues affected in the two cases. So that a case of cauliflower excrescence is one in which the cancer attacks simply the surface of the cervix uteri; but a case of cancer of the medullary form is one in which the disease attacks the tissues of the cervix more deeply, producing a very noticeable *hypertrophy* of the parts affected in the first instance, which spreads into and invades the adjacent parts, including the free surface. The two frequently exist together; it being a matter of common observation, that in patients with the cauliflower excrescence, although the disease may appear limited to the os for a time, the medullary form of the disease generally afterward attacks the uterus and thus causes death. In the cauliflower excrescence (see Fig. 184), the villi covering the cervix become hypertrophied, the vessels with which they are supplied exceedingly enlarged, and forming loops; each villus is found to contain cells of every form: nuclear, formative, caudate, mother-cells, spindle-shaped or nucleated fibres, and binucleated cells, also cells in a state of fatty degeneration. A thick layer of epithelium covers the whole. The cauliflower excrescence thus owes its shape, textures, etc., to the original configuration and relations of the villi covering the cervix uteri. The microscopic appearances in the other class of cases it is unnecessary to allude to.

The characters of the *cauliflower excrescence of the os uteri* are as follows: From the greater part or the whole of the circumference of the os uteri a somewhat soft granular mass grows downward into the vagina, at the centre of which is the aperture of the os, and above which is felt a narrowed constricted portion, the junction of the vaginal portion of the cervix with the vagina. The size varies. The more usual circumstance is that it escapes detection at an early period of its growth, owing to the symptoms at first produced being slight; and when first discovered it may be so large as to fill the upper part of the vagina. It may grow to such a size as to reach to the ostium vaginæ. Ordinarily, the growth consists of several portions, each of which is

lobulated in shape, and separated by a fissure from the adjacent portion. One lip of the os is usually larger than another, and sometimes it is not at first easy to distinguish the orifice of the os between the mass of tumors in question, some of which may be as large as an apple, others smaller, but all attached to, and continuous with, the margin of the os uteri. If the patient be examined at an early stage of the growth, the os is found slightly puffed out, softer than usual, and presenting a granular feel. If the examination be made at a later stage of the disease, the

FIG. 184.

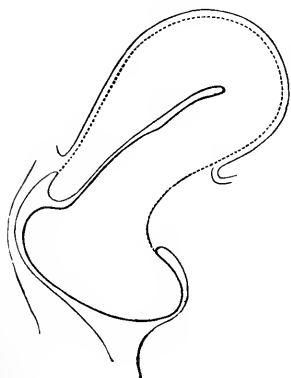


vagina may be found filled and distended by a large spongy mass. At a still later period the growths may have partly disappeared, having ulcerated away, and then the os uteri may present the changes met with in the ulcerative stage of ordinary cancer of the uterus, together with those just mentioned. And in not a few cases when the patient is for the first time examined, it is found that while presenting well-marked tumors of the cauliflower kind, the cervix itself is hardened, greatly thickened, and the uterus more fixed than usual. We may find that above the situation of the excrescences, the cervix uteri forms a pedicle compara-

tively healthy in structure; the pedicle may, however, be very short, and hardly to be felt. It not unfrequently happens that growths similar to those proceeding from the os uteri are found situated on the vaginal walls, in proximity to the os uteri.

The cauliflower excrescence of the os uteri is soft to the touch, unless under the constricting influence of astringent injections; it has a peculiar granular feel, bleeds easily when touched, or after intercourse, sneezing, or straining; and an almost constant symptom is the presence of a copious watery, and latterly foetid, discharge from the vagina. The drawing (Fig. 184, after one in Sir J. Y. Simpson's Lectures) represents a large mass of this kind and its relation to the os uteri.

FIG. 185.



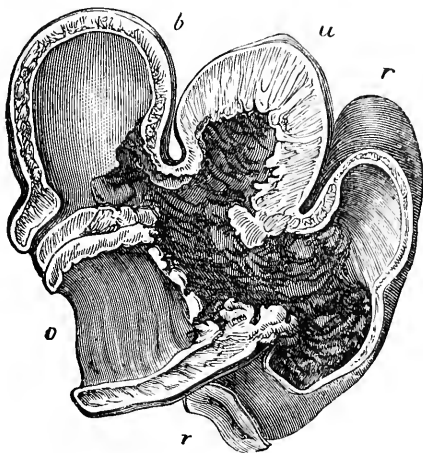
The characteristics of this condition are physically those above stated; the one on which most reliance is to be placed diagnostically is the origin of the mass from *all*, or the greater part of, the circumference of the os uteri. The soft pulpy mass may give to the finger a sensation like that experienced on touching the os uteri in cases of placenta prævia, but the other circumstances would hardly admit of the two conditions being confounded.

The symptoms of this disease are frequently very indistinct at first. The distinctive signs, watery offensive discharge, occasional bleeding, etc., may not show themselves early in the disease, or, if observed, they may be so slight as not to attract particular attention, and thus a considerable time may be lost before the disease is detected, or its presence even suspected.

Another form in which cancer may be found growing from the os uteri is the *medullary tumor*. From it the cauliflower excrescence is distinguished by its regular and extensive attachment or departure from the os, the medullary tumor growing from one side or other of the cervix, and being more or less pedunculated; by its granular structure, that of a medullary tumor being more consistent, and firmer, and lobulated; and by the progress of the case,

which advances much more rapidly to a fatal termination when the tumor is a medullary one. These medullary tumors have a surface more firm and even than that of the cauliflower excrescence, but not so firm as that of a *fibrous polypus* projecting into the vagina. From the latter tumor it would also be distinguished by the nature and the mode of attachment, the pedicle of the polypus being surrounded by the os uteri, whereas the medullary tumor grows from the side of the os, and not from the interior of the uterus. Profuse hæmorrhages, fœtid discharges, etc., may be observed equally in cases of medullary tumor

FIG. 186.*



and of polypus. In those cases of polypus where the tumor is so large as to fill the vagina, or where the surface of the mass is apparently or actually adherent at the os, the diagnosis might be attended with difficulty. The presence of a large medullary mass growing from the os uteri is not, it must be remarked, a common phenomenon in cases of cancer of the uterus. The drawing (Fig. 185) represents a tumor removed by me in University College Hospital, June, 1866. On microscopic examination it proved to be malignant, although smooth and tolerably hard. The patient

* Fig. 186 (from Dr. Arthur Farre) shows the bladder, uterus, and rectum simultaneously affected with cancer.

subsequently (Feb., 1867) appeared again, and the uterus was then affected with carcinoma.

When cancer attacks the surface *alone*, it appears that it may be for a very considerable time restricted to that part, though this is rare. The most common event is that the disease attacks simultaneously the superficial and the deep parts of the cervix uteri, with the result that there is cauliflower excrescence of the os and infiltration with medullary cancer of the cervix itself. In some rather rare instances, however, while the cervix remains apparently sound and healthy, an insidious invasion of the upper part of the uterus, by carcinomatous deposit, occurs. Dr. West met with this affection in two out of 120 cases of uterine cancer. Sir J. Y. Simpson stated that about two cases out of 30 of cancer of the uterus are of this kind. The deposit may be observed in the outer layer of the middle coat of the uterus, or in the sub-peritoneal or peritoneal coat; or attacking the whole thickness of the uterine walls; or in the mucous or sub-mucous coat of the body or fundus uteri. In both of Dr. West's cases "the enlargement of the uterus was very considerable; in one it measured six inches in length, and in the other was nearly as large as the adult head." From the uterus the disease spreads to the adjoining tissues at the upper part of the vagina; the glands in the pelvis become affected. The bladder is not seldom involved (see Fig. 186), one result being vesicovaginal fistula. Not long since I saw a lady in whom the uterus had apparently become blocked up by extension of the disease to the fundus of the bladder, death resulting apparently from rupture of the dilated ureters into the abdomen. The disease may extend into the rectum; all these organs—the vagina, bladder, and rectum—may be found in communication with each other in consequence of the ulceration of the cancerous infiltration. Indeed, the condition to which the unfortunate patient may be reduced by this dread disease is often as deplorable as it is possible to conceive. Death itself is preferred to the continuance of such unmitigated and unrelievable distress.

*Sarcoma of the Uterus.**—Under the terms "sarcoma of the uterus" (Virchow), "recurrent fibroid tumor of uterus" (Hutchinson), has been described a peculiar disease of the

* In the chapter on Fibroid Tumors this affection has also been in part described under the term "recurrent polypus."

uterus of a malignant, or certainly quasi-malignant, character, consisting in the formation of a growth within the uterus, gradually expanding the organ, and protruding finally at the cervix. Professor Alex. R. Simpson of Edinburgh has published a valuable monograph on the subject.* He describes four cases of his own, and presents accounts of a total of forty-eight cases. The peculiarity of the growth is, that, notwithstanding an apparently complete removal, it is liable to recur. The general history of such cases resembles in some ways those of fibrous polypus of the uterus—there is hæmorrhage, profuse leucorrhœa, etc. But in sarcoma of the uterus there is generally also pain more or less severe, and such as is generally observed in cases of cancer, and an offensive odor of the discharges. Cases have been related in which the growth has been removed three or four times, with relief for a time, the disease recurring and proving ultimately fatal nevertheless. A curious feature in four of the cases collected by Professor A. R. Simpson was the complication of inversion with the sarcoma. Dr. Gaillard Thomas† has observed four cases. He considers the disease intermediate between myofibroma and true cancer. The growth is slower than that of cancer. The prognosis is always unfavorable.

I have myself seen an undoubted case of sarcoma. The uterus was found to be much enlarged and filled with a soft pultaceous yet consistent mass, which had to be removed by means of a tablespoon from the interior of the uterus. The patient was a widow, æt. 55. Three operations were performed in this case at intervals of some months. Finally death occurred, and the uterus seemed almost to have disappeared, the disease having extended to the rectum.

It appears probable that these cases of sarcoma of the uterus have the same relation to cancer of the body of the uterus as epithelioma of the cervix has to medullary cancer of the cervix. A pulpy soft mass grows from the uterine mucous membrane—is probably a degeneration of this—forms a tumor *in utero*, and later on the disease attacks the uterine wall itself.

The *general symptoms* of uterine cancer vary according to the stage of the disease. Ordinarily there is pain, seated

* "On Sarcoma Uteri."—*Edin. Med. Journ.*, Jan., 1876.

† *Amer. Journ. of Obst.*, vol. vii., p. 45.

in the uterus or near it, and more or less constant; but by no means invariably. It is yet a question whether such pain actually precedes the development of the tumor; probably it does in the majority of cases. The disease progressing, the patient becomes evidently ill; she has a peculiarly worn expression in many cases, but not always; the tint of the skin is often sallow,* but chiefly where there have been frequent losses of blood. Later on the patient suffers from indigestion, often exceedingly intractable in form: vomiting or nausea is not rarely witnessed. Hæmorrhage is common (see p. 51). Sanious, watery, puriform, or offensive discharges, almost invariably present at some stage or other of the disease, are signs also of great importance.

Duration of Cancer of the Uterus.—Lebert gives an average of sixteen months; Dr. West fifteen months. Hence, in a given case, if we are informed that the patient has been subject to irregular (*i.e.*, non-periodical) hæmorrhages for upward of two years, this fact would be against the probability of the hæmorrhage being due to cancer uteri. Sir J. Y. Simpson's experience led him to fix a longer period as the ordinary duration of cancer uteri. "Patients usually die in from two years to two years and a half after the detection of the disease," says this author.† According to the same authority, where the disease occurs in aged persons, and has taken on a slow and senile character, its course may be very protracted. In Dr. Fordyce Barker's cases (New York) the average duration in 26 instances was three years and eight months.

As regards the fatality of uterine cancer, the general custom has been to take an extremely gloomy view of them, and to consider such cases hopeless in so far as recovery is concerned. Dr Barker, in the paper before quoted, gives facts observed by himself which encourage a somewhat less hopeless view in certain cases of this disease. He says that in one case eleven years had elapsed since he made the diagnosis of uterine cancer, the patient still evidently suffering from the disease, but able to go about. He states that he has removed the cervix for epithelioma in 11 cases, 9 of which recovered and have remained well. In one case recovery from uterine cancer occurred after repeated use of the actual cautery. In another a free application of the

* See Examination of Os Uteri.

† *Med. Times and Gaz.*, Jan. 15, 1859.

acid nitrate of mercury was followed by complete and persistent cure.

When the body of the uterus or the tissues of the cervix are affected, and have begun to ulcerate, the disease usually progresses rapidly. How long the stage previous to this may last we have no direct evidence. When the surface of the os only is affected (cancroid or cauliflower excrescence), the disease is by no means so quickly fatal. One of the most valuable facts in reference to this question is given by Sir J. Y. Simpson in his "Lectures on Diseases of Women." The patient, the subject of the case, had a large cauliflower excrescence the size of an egg removed eighteen years previously. Since that period she had had five children, and was still alive. With reference to this case it should be stated that no "caudate or spindle-shaped bodies" were found in the tumor removed.

Cancer of the Vagina.—Cancer of the vagina is far less frequently met with as a primary affection than cancer of the uterus. But the disease is now and then met with here primarily. It invades the vagina not unfrequently by extension from above. Thus in 54 cases of carcinoma uteri observed by me in hospital practice, the vagina is noted as being affected as well as the uterus in 11 cases. In some of these 11 cases it appeared as if the disease had begun in the vagina. In one case in private practice the vagina was very extensively affected, while the uterus gave very little indication of participating until later on.

The disease occurs (when primary or secondary) as an infiltration in the vaginal wall, or it may begin as a papillary growth of villous character on the free surface. By the finger the physical condition discovered may thus vary exceedingly. The vagina may be so blocked up that the passage of the finger at its entrance is very difficult indeed. The bladder or rectum becomes later on perforated or not according to circumstances. Another effect is that the ureter on one side may become so compressed that the functions of the corresponding kidney are arrested.

Diagnosis in the Early Stage.—The diagnosis of cancer of the uterus, in its early stage, from certain other conditions which may produce somewhat analogous physical alterations in the os and cervix uteri, and which may give rise also to symptoms more or less resembling those witnessed in the early stages of this justly dreaded disease, is a matter of the utmost importance. A fissured, irregular, indurated,

and enlarged condition of the vaginal portion of the uterus and of the lips of the os may proceed from a variety of causes. In *women who have had children*, the os uteri is generally more or less fissured, giving the portio vaginalis a sort of lobulated feel; the number of fissures and lobes varies from three to four, five, or six; and in women who have had severe labors, rendering the use of instruments necessary, the os may be found very deeply fissured, the parts having been torn during labor. If the uterus be healthy, however, there is no marked enlargement of the part—on the contrary, there is a tendency to a diminution in its size, the diminution being more marked as the patient becomes older. The fissured condition of the os uteri is thus quite compatible with health. When, however, in addition to this, the lips of the os uteri are indurated and larger than usual, the whole vaginal portion participating in this condition, it is indicative of disease. It may be due to the comparatively harmless *hypertrophy of the uterus* (generally synonymous with defective involution of the organ after childbirth), to a *chronic inflammatory condition of the cervix*, to *fibrous tumors* in the walls of the uterus, to *carcinomatous deposit* in the substance of the portio vaginalis—the latter being the first in a series of changes which may result in the death of the patient at no distant period—to *tuberculous affection of the cervix uteri*, or to *small fibrous tumors* in the portio vaginalis. The diagnosis between these several conditions is often one of great difficulty, and is only arrived at by an attentive consideration not only of the physical signs themselves, but of the attendant phenomena, and of the present and past general condition of the patient.

Dr. Henry Bennet, whose searching analysis of the abnormal conditions of the os uteri in relation to the diagnosis of cancer cannot be too highly spoken of, and who first laid down exact rules for the diagnosis of cancer from a condition with which it was formerly very frequently confounded—viz., chronic inflammatory induration—has accurately pointed out some of the diagnostic points in reference to the question now at issue, in the following words:

“When the lobular, knotty, irregular condition of the cervix is the result of laceration, and is simply inflammatory, the fissures which separate the lobes radiate round the cavity of the os on a centre, which is not the case in a cancerous tumor—each separate lobe being perfectly

smooth in itself, and free from tubercles or superficial inequalities."*

The mere *size* of the lobules indicates nothing of malignant character, provided they be tolerably smooth; the depth of the fissures is of favorable import also when the lobules are smooth. Extreme hardness is often observed when there is no serious disease. Uniformity in the degree of the hardness of the lobules is favorable. Slight excoriation of the surface of the lobules is quite compatible with simple inflammation, or similarly innocuous conditions. A deeply *excavated* ulcer on some portion of the surface would excite apprehension as to the cancerous nature of the enlargement. When the lobulation and enlargement are limited to one side of the os, this may be due to growth of a non-malignant tumor in the substance of the cervix. The smoothness of the tumor, the absence of general signs of disease, absence of bloody and offensive discharges, would generally, but not always, put suspicion of cancer on one side. A quickly growing lobular enlargement of one lip of the os uteri is probably malignant in character.

Time is of importance in the diagnosis of these cases. An induration and enlargement of the os uteri which is known to have existed for some years may be generally pronounced to be non-cancerous.

Negatively, the points now alluded to are of great diagnostic value. Thus, supposing the patient to be suffering from pain, offensive discharge, occasional hæmorrhages, etc., and suspecting herself to be the subject of cancer, a very simple examination might, by revealing an absence of all induration or enlargement of the os uteri, render it almost certain that the case was not one of cancer. The rare occurrence of cases in which the disease begins in the fundus uteri prevents this rule being quite absolute.

Unquestionably the most important, and perhaps the least fallacious, guide to the diagnosis in a doubtful case, is the mobility or immobility of the uterus—a point which has been already alluded to; and when the uterus is found to be as movable as usual, while there is an absence of induration in the cellular tissue before and behind the cervix uteri, no considerable pain, no offensive discharge, no particular constitutional derangement, we may safely conclude that the case is not one of cancer. The immobility

* "On Inflammation of the Uterus," 4th ed., p. 90.

due to pressure of tumors within the pelvis must not be confounded with the condition produced by cancerous disease of the uterus itself. Lastly, it must be recollected that mobility of the uterus is not necessarily and always lost, even in advanced cases of cancerous disease, although as a rule it is so lost.

With all the helps to diagnosis which have been mentioned, several cases will remain of which it may be for some time difficult to determine the true nature, and to say whether the diseased condition of the cervix be of malignant or non-malignant character. The inequality of the induration is generally an indication of malignant disease. Again, the fissures which separate the lobes of the os may be at an early period of the disease smooth at their edges, as in the non-malignant form; but they soon assume a sharply distinct shape. Hæmorrhage from the generative organs is a symptom of cancer usually observed at an early period, but hæmorrhage may be entirely absent, the catamenial discharge only being slightly increased. The value of "hæmorrhage" as a symptom of cancer has been discussed at p. 51. Another symptom, also early observed, is pain in the uterine and lumbar regions—not merely discomfort, but actual pain. Weakness and general debility may be observed also from the very commencement. The importance of time has been alluded to, and much aid will be derived from observation of the progress of the case in making a diagnosis. Thus, if a thickened, fissured, indurated condition of the os uteri have existed in a particular case for a considerable time, say twelve months, and no particular disturbance of the general health be observed, it is highly probable that the affection is not malignant. It is not in the nature of cancer affecting the substance of the cervix uteri, and giving rise to physical changes such as those described, unless under very exceptional circumstances, so long to delay its progress.

The possibility of laceration of the cervix uteri, leading to cancerous degeneration of the os, must be kept in view in forming a diagnosis. If, as is believed by eminent American authorities, such lacerations are often forerunners of cancer of the uterus (particularly the epithelioma of the cervix), a lobulated and deeply fissured condition of the os associated, would be naturally carefully scrutinized. Dr. W. H. Baker *

* *Amer. Journ. of Obst.*, April, 1882.

says: "I know no more frequent cause of cancer of the cervix uteri than the persistent irritation to which the everted lips of a lacerated cervix are exposed; and if the only thing to be gained by Emmet's operation for the repair of such a condition were to diminish the tendency to the establishment of this disease (cancer of the uterus), I would perform it in every instance where the rupture was sufficient to allow any eversion."

In the diagnosis of cancer at an early period, Dr. Montgomery laid particular stress on a shotty condition of the margins of the os, associated with turgidity, and with a crimson discoloration of the os tincae generally. In the first stage of cancer of the uterus, Dr. Bennet states that he would expect to find "shot-like, pale, indolent indurations, all but insensible to pressure, strewn irregularly over the cervix, or an irregular hard tumor similarly characterized developed on its surface." In a case related by Becquerel* there was a small, hard, violet-colored tumor, projecting from the surface of the cervix at a very early stage of the disease. It was unequal and nodulated. The condition of the os in the early stage of cancer in a few cases in which I have had the opportunity of getting accurate information on this point was as follows: Nodular irregular eminences, the mucous membrane covering them having a deep or livid blue color, and contrasting with adjacent structures not yet affected with induration and irregularity of contour. This applies to cases of cancer commencing in the substance of the os uteri, and not to cases of cauliflower excrescence when the disease attacks primarily the papillary structures on the surface.

The largely patent condition of the orifice usually present in cases of cancer is not peculiar to it, as already remarked.

A fœtid discharge from the vagina is too often looked upon as indicative of cancer. Wherever there is hæmorrhage, there may be fœtid discharge due to decomposition of clots of blood which have been detained.

There may be a healthy condition, or a comparatively healthy condition at least, of the os and cervix uteri, and still cancer of the uterus may be present, the disease being confined in some rare cases to the body or fundus uteri. In such cases, a digital vaginal examination might reveal little or nothing. If the patient present constitutional signs, like

* "Traité Clin. des Maladies de l'Uterus" (Paris), tom. i., p. 321.

those of cancer, with occasional hæmorrhages, profuse and continuous fœtid discharges, watery or purulent, while no alteration of the os and cervix is revealed by examination, cancer of the fundus uteri should be suspected. The upper part of the uterus is generally much enlarged in such cases, and may be felt so enlarged above the pubes.

In conclusion, it should be borne in mind that the condition of the os and cervix, to which the previous remarks apply, is one simply of induration, slight enlargement, and lobulation. Ulceration, marked loss of substance, associated with hardening, etc., is a condition to which the remarks in question are not at all applicable.

Irregularity, unevenness, etc., in different parts of the vaginal portion, may be due to *small rounded tumors* embedded in the tissue of the cervix. Such tumors, which are of fibrous character, might give rise to suspicion of cancer, from the fact that one side of the cervix would under such circumstances be hard or nodulated, and the other side soft and natural. These tumors are, however, very rare: they are of slow growth, give rise to little inconvenience, and never to grave symptoms, such as are observed in cancer.

Tuberculous enlargement of the vaginal portion is a condition of exceeding rarity. It is characterized by tumors of uncertain size, of rounded form, at first firm, afterward softer, yielding to the pressure of the fingers, and indistinctly fluctuating; always accompanied by considerable engorgement of the cervix uteri. It is a condition due to masses of tubercle yet unsoftened, to tubercular infiltration, or to inflammatory action attendant on softening.* Occasionally are seen small yellow deposits on the surface of the cervix the size of a split pea, or smaller, and giving issue, on being pricked, to a small quantity of matter of the consistence of pus. These deposits, which have been alleged to be tuberculous, Dr. West, the accuracy of whose description of them I can quite confirm, looks upon as due to hypertrophy of the Nabothian follicles.

Practically, the importance of the question at issue is not great. The existence of tubercle of the cervix is denied by Rokitsansky; it is certain that tubercular infiltration of the cervix with tubercular softening, etc., is very rare. I believe, however, that in women of tubercular tendency, and in whom the cervix uteri is sometimes found enlarged, hy-

* Roberts's description, quoted by Dr. West, *op. cit.*, p. 362.

pertrophied, and indurated, this enlargement is of tubercular origin, though, anatomically speaking, there may be no deposit of tubercle. I have in private practice seen cases which might be referred to this category. This is a point which is, however, more interesting in connection with the subject of treatment than that of pathology.

Diagnosis in the Later Stages.—The condition of the parts

FIG. 187.*



characterized by *irregular enlargement, induration, destruction, and loss of substance of the vaginal portion and of the lower part of the uterus, all more or less combined*, is that present in the ulcerative stage of cancer of the uterus; and it is a condition which is so characteristic that it can hardly be mistaken for anything else. The degree to which the destruction of substance is found to have proceeded varies very much. The os uteri may be found to have lost its natural shape, or

* Fig. 187 represents carcinomatous infiltration of the posterior lip of the os uteri, also ulcerative destruction of the anterior lip.

the vaginal portion has wholly disappeared, and the finger passes into an excavation with hard irregular walls, which are constituted by the remains of the vaginal portion, or by the carcinomatosly infiltrated cellular tissue at the upper part of the vagina. Above is felt a hard irregular mass, the somewhat enlarged uterus, fixed and immovable, and not easily definable from the surrounding hardened structures. A not unfrequent condition of the os uteri in cancer is a hard, smooth, sharply-defined surface, just as if a piece had been actually removed by the knife, leaving the edges well marked. Such a condition is represented in Fig. 187, showing at one part of the os nodular projections, at another the peculiar condition just described. "When you feel," says Sir J. Y. Simpson,* "a rough, irregular, excavated or anfractuous ulcer seated on a hardened base, and surrounded by hardened tissue, cancer is present." The process of ulceration may be found to have extended to the rectum, in which case fæces and flatus pass from the vagina to the bladder, occasioning involuntary micturition; or to both. In the latter case the rectum and bladder open into the common cloaca, resulting from the destructive process which has now been going on. The destructive process may have affected one side only of the os, the other only being as yet enlarged, and denser and firmer than usual. It is not uncommon to find fungous softish masses, which bleed when touched, growing from the already ulcerated surface. This ulcerative stage of the disease is almost universally characterized by an offensive leucorrhœal discharge, this discharge becoming tinged with blood after examination or after exertion. There is a general failure of the strength of the patient, emaciation, want of sleep, and disturbances of the digestive organs, shown by nausea, vomiting, etc., and, what is important, there occurs from week to week perceptible increase in the intensity of these symptoms, often a very rapid one; the skin of the patient has in some cases a remarkable straw-colored tint, there are lancinating pains, severe in character, felt in the uterine region; at this period, also, pains depending on pressure of the enlarged uterus on the nerves in the pelvis are very commonly observed, viz., pains along the course of the sciatic and other nerves. Other symptoms attending this stage of the affection are, pains in the breast, and, not seldom, increased

* *Med. Times and Gaz.*, Jan. 15, 1859.

sexual desire. The occurrence of "hæmorrhages" and of "offensive discharges" are characteristic, but the value of these as signs of cancer has already been discussed (see p. 111, vol. ii).

With reference to "cachexia" as a means of diagnosis, Mr. Sibley, in his valuable "Contribution to the Statistics of Cancer,"* makes some important remarks.

"The cachexia," says Mr. Sibley, "is closely proportionate to the amount of hæmorrhage, discharge, and pain. In cases where there is but little hæmorrhage, and a small amount of discharge, the cachexia is hardly obvious, and this is usually observed even where the cancerous tumor has attained great magnitude. It sometimes happens that the cachexia becomes well marked, even where there is but little hæmorrhage or discharge; but in these cases the cancer is usually found to have involved some important internal organ, and to have interfered with some vital function. On the other hand, in those patients with whom there is profuse discharge, and frequent attacks of hæmorrhage, the wasted, sallow visage of advanced cancerous disease becomes obvious at an early stage of the complaint. In no class of cases is the cachexia more pronounced than in uterine cancer." And he has come to the conclusion that "the presence or absence of cachexia is valueless as an aid to diagnosis. It appears to be the result of a local disease, and is not to be regarded as evidence of a state of system which leads to the production of cancer."

In a few rare cases destruction of the uterus by cancerous ulceration progresses to a very advanced stage, all the usual symptoms of cancer—pain, offensive discharge, hæmorrhages, constitutional affection—being entirely absent. When cancer of the uterus in the ulcerative stage is present, the diagnosis is not usually difficult when digital examination is practiced, those rare cases excepted in which the lower part of the uterus is sound, or apparently so, there being cancerous disease of the interior of the body of the uterus. In these cases, the result of the ordinary digital examination would be liable to mislead, unless corrected by due attention to the more obvious and symptomatic signs of cancer.

The diagnosis of cancer of the uterus advanced to the stage of ulceration, and presenting to the touch the phys-

* "Med. Chir. Trans.," vol. xlii., p. 194.

ical characters above described, is not a matter of difficulty; the difficulty lies, and especially with those whose sense of touch is uneducated, in determining that cancer is *not* present. Thus a patient may present herself suffering a good deal from pain, who is the subject of profuse menstruation, of a profuse discharge, which is, she states, occasionally "unpleasant" to the smell. On digital examination of the os uteri, a decided enlargement and hardening is felt at one part, and a softer velvety surface at another. But the hardness and induration may be due, as already pointed out, to simple hypertrophy, inflammation or congestion of the vaginal portion: the feeling of the presence of a softer portion may be produced by the inner surface of the os, with its lining in a hypertrophied, shaggy, and villous state.

A peculiar form of destructive ulceration of the cervix uteri has been in a few rare cases observed, all that has been met with on examination being *loss of substance*. The lower part of the uterus has disappeared, and in place of the cervix there is a rough, irregular border, above which the body of the uterus, movable as usual, is felt by the finger: there is an "absence of any thickening, hardness, or deposit of new matter in its vicinity," as in carcinoma (West). This condition is described as *corroding ulcer of the os uteri*. The symptoms in cases of this description are not distinctive. Recent writers do not confirm the observations of Sir C. M. Clarke, that the pain is peculiar in these cases. So far as the results of digital examination are concerned, corroding ulcer is characterized by absence of induration in the neighborhood, by absence of fixation of the uterus, and by the sharpness of the margin of the ulceration. It is an interesting fact that corroding ulcer differs from cancer in respect to its fatality and duration. The observations hitherto made appear to indicate that the disease may continue for some years, indeed for several years. Dr. West believes that the affection ought to be classed with rodent ulcers. On the whole it appears right to consider it a form of cancer.

The diagnosis of the *cauliflower excrescence of the os uteri* and of the *medullary tumor of the os uteri* will be gathered from the description of the physical characters of these conditions at p. 264.

Use of the Speculum in the Diagnosis of Cancer.—But little advantage can be derived from the use of the speculum in cases of advanced cancer of the uterus, the diagnosis of

which, by the aid of digital examination alone, is not usually attended with difficulty; and, unless employed with great care, the use of the speculum may, under such circumstances, occasion hæmorrhage, and produce mischief of other kinds.

When, however, the os uteri is found on digital examination to be indurated and irregular, and when there is doubt as to whether cancer in its first stage may or may not be present, the use of the speculum may be the means of resolving that doubt. The physical condition of the os and cervix uteri, as felt by the finger, in the early stage of cancer, has been already fully described; it only now remains to give an account of the appearances presented to the sight in such cases.

Respecting the *color* of the surface in induration due to cancer, there is a difference of opinion; and this arises from the fact that the first stage of cancer of the uterus so very rarely comes under observation. Supposing cancer to be present, and the ulceration to have only just commenced, the ulcer will be found to have peculiar characters; it is excavated and depressed below the surface, the edges irregular, jagged, and somewhat tumid, and sharply defined. In chancre, the ulcer is distinguished by its being more superficial, by the absence of enlargement, and induration of the tissues beneath and around, by the absence of general signs of cancer, and by the effects of anti-syphilitic treatment.

Judging by ocular inspection alone, there are undoubtedly cases in which difficulty might occur in deciding between cancerous ulceration and ulceration due to other causes; but it cannot be too frequently repeated that it is by combination and comparison of the general and particular data that a diagnosis must be arrived at. In the case of suspected cancer, more can be learned from digital examination than by the most careful use of the speculum.

The appearances presented by the os in cases of *cauliflower excrescence of the os uteri* are described by Sir C. M. Clarke as follows: "There is a striking resemblance between itself and a portion of the upper surface of a cauliflower or a head of brocoli. The surface is granulated, and it consists of a great number of small projections, which may be picked off from the surface as the granules may be detached from the vegetable." The surface, as seen by the aid of the speculum or otherwise, is of a bright red color

It is very delicate, and the least touch sometimes suffices to make it bleed. Hence, if the speculum be used, great care must be exercised not to injure the surface. A digital examination affords most conclusively the desired information.

TREATMENT.

The *medical* treatment of cancer of the uterus has hitherto proved a failure; Mr. John Clay's remedy, one of the most recent of the medicines recommended, Chian turpentine, having proved to have little or no efficacy after an exhaustive trial in the wards of the Middlesex Hospital.*

In regard to preventive treatment, up to a recent date nothing of a practical character had been suggested. It appears, however, probable that in the future lacerations of the cervix may be considered sufficiently important as possible causes of cancer to induce the practice of repairing such injuries, if for no other reason. It is the fact, at all events, that in America one of the reasons for repairing such lesions is the probability of preventing the occurrence of cancerous disease of the os uteri by the operation in question (see p. 258). It must be conceded, at all events, that a raw, imperfectly healed surface, exposed continually to friction, and in a more or less constant state of irritation, presents a condition likely to favor the origination of a morbid or special nutritive action such as is observed in cases of cancer.

Respecting the treatment of cancrroid of the uterus (cauliflower excrescence), most authorities are agreed as to the propriety of removing the diseased structure when the disease is limited to the os uteri, and the uterine tissue above is not affected. Those cases are most favorable for operation where the vaginal portion—at its junction with the vagina—is not thicker than usual, and where consequently the tumor alone constitutes the disease. The operation may be done also where the cervix is a little enlarged; here the prospect of arresting the disease would be a small one, and the benefit of the operation would be temporary. That the disease may be arrested by amputating the cervix has

* For Mr. Clay's paper on the "Treatment of Cancer of the Uterus by Chian Turpentine," see *Lancet*, March 27, 1880. See also "On Chian Turpentine and its Uselessness in Cancer," by Henry Morris, M.B. (*Lancet*, Nov. 27, 1880), in which paper are related twelve cases treated by it without benefit at the Middlesex Hospital.

already been stated. In other cases, while the patient derives advantage from the operation for a time, the disease attacks the body of the uterus a little later. In many cases cancrroid of the os is not recognized until the disease has already spread to the body of the uterus; in some of these cases even temporary alleviation of symptoms follows removal of the decomposing and discharge-secreting mass which is filling up the vagina.

As a palliative measure frequently, as a curative measure occasionally, amputation of the cervix uteri in cases of cancrroid of the os uteri is a valuable operation; it may prevent a fatal result altogether, it will almost certainly postpone that fatal result, even when inevitable. The bleeding and the copious exhaustive discharge are at once arrested. The patient would die, or might die, from continuance of these; and, for a time at all events, this source of danger is removed, and comfort and ease are secured to the sufferer.

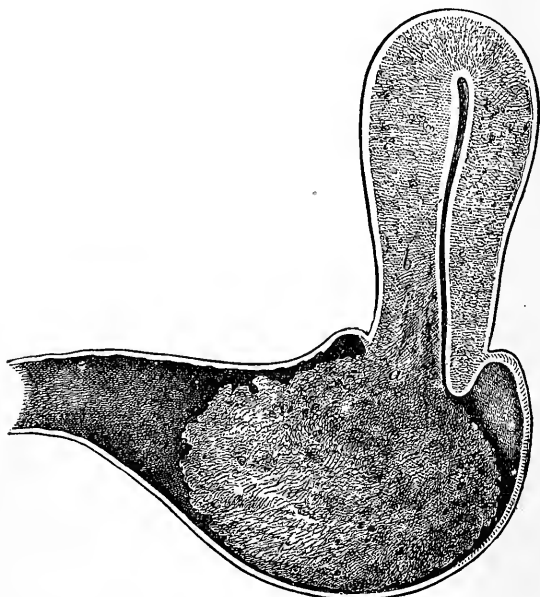
The *écraseur* is the best instrument for the operation. The chain or the wire rope may be used; the latter is best when the pedicle is a short one, or when the uterus is fixed. The scissors are preferable to the knife if the *écraseur* cannot be employed. The galvano-cautery is a valuable means of removing the cervix in such cases. As pointed out by Byrne and Goodell, the wire should not be made too hot, and the removal should be effected slowly and deliberately. The benzoline (Paquelin's) thermo-cautery is a most valuable instrument for such cases. There is an objection to drawing down the uterus more than can be avoided. Sir J. Y. Simpson believes, probably with reason, that the dragging down of the uterus has been the cause of that fatal shock which has followed the operation in one or two instances. Otherwise the operation is perfectly free from danger. Perchloride of iron suspended in glycerine should be applied on a piece of lint to the cut surface, and the vagina carefully plugged with wetted cotton-wool or other material, if there be any tendency to hæmorrhage. (Other particulars concerning amputation of the cervix will be found at p. 453, vol. i).

There are other cases of cancer of the uterus where extirpation of the disease is undoubtedly the best treatment, viz., where the vaginal portion or parts thereof are infiltrated with medullary cancer, the cervix itself at the point of reflection of the vagina appearing sound. The operation

has been done but little, owing to the fact that the disease is rarely diagnosed at this early stage. I have amputated the cervix in a few cases of this kind, however, and at the present day there is a growing feeling in favor of excision of the cervix whenever the diagnosis is established.

Dr. Marion-Sims adopts a procedure which in his hands has appeared to give good results. He excises the cancer-

FIG. 188.



ous growth at the cervix uteri, and continues the excising process, by uterotome, scissors, and cutting curette, a little beyond the point where the healthy tissues are reached. The surface exposed is carefully packed over with styptic cotton.

[Dr. J. Marion Sims published an article in the *Am. Jour. of Obstetrics and Diseases of Women and Children*, vol. xii., No. 3, July, 1879, from which I make the following extracts:

My plan of operating for epithelioma of the cervix is not to amputate, but to exsect the whole of the diseased tissue,

following it up to the body of the uterus if necessary, and when all is done that can be done by knife and scissors, then caustic strong enough to produce a slough is to be applied to the part from which the cancerous tissue has been exsected, and allowed to remain there till the slough is ready to come away.

I can better illustrate my method by clinical examples:

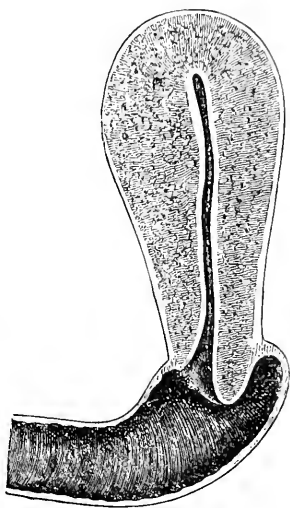
In October, 1873, Mrs. M., aged 35, the mother of four children, was sent to me by her physician from a neighboring town with epithelioma of the cervix uteri. She had been losing blood for several months and had a profuse serous leucorrhœa. She had no pain whatever and was the picture of good health.

On examination, I found the upper part of the vagina filled with a round knobby tumor, springing from and involving the anterior lip of the os tincæ. It was about the size of a Sicily orange, and bled easily on slight pressure. The uterus was movable, and the vaginal membrane was not infiltrated. Fig. 188 represents the tumor growing from and being a continuation of the anterior portion of the cervix uteri.

This case would have pleased those who advocate amputation, whether by the *écraseur* or by the electro-cautery. With either of these the tumor would have been removed in the direction of the dotted line *a*, leaving the portion between *a* and *b* reaching up to the os internum. But, guided by former experience, I determined to exsect the tumor as far up as I could find any diseased structure. And so, after breaking down the tumor and removing it with scissors at the dotted line *a*, I continued the operation by exsecting with knife and tenaculum the anterior half of the cervix, quite up to the os internum, as shown by the dotted line *b*.

With the appropriate after-treatment, the excavated cervical canal filled up with healthy granulations in a fortnight, and in another week Mrs. M. returned home with

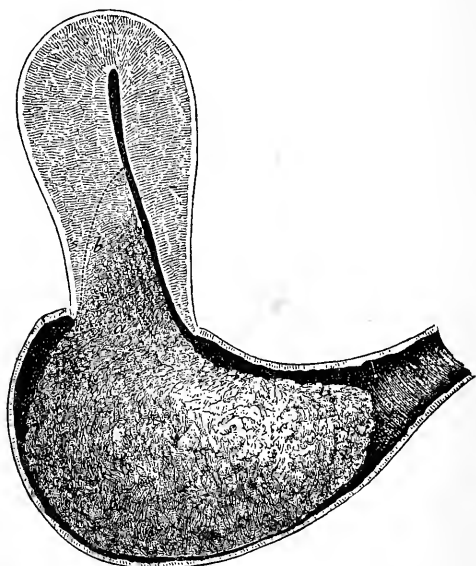
FIG. 189.



the injunction to report to her family physician every two months, to see if there should be any recurrence of the disease. When she left me the os uteri presented the appearance represented by Fig. 189. The anterior lip had been destroyed by the operation, and the cervix anteriorly and the vagina formed a continuous line, while the posterior lip projected normally into the vagina.

Twelve months after this operation, her physician sent

FIG. 190.



Mrs. M. to me again, with a recurrent epithelioma. It presented precisely the same symptoms and the same appearance as the first tumor did. But it was a little larger and grew wholly from the posterior portion of the cervix uteri, filling up the vagina to a greater extent than the first one did. Fig. 190 represents the appearance and relative size of the tumor. It seemed to be a prolongation of the posterior lip of the os tincae, as the first tumor was the prolongation of the anterior.

The operation by the wire loop, whether by electricity or by the *écraseur*, would have amputated the mass at the dot-

ted line *a*. But I did not stop at this point; I cut as far up the cervix as I could find any diseased structure to remove, which was quite up to the os internum, as shown by dotted line *b*. In three weeks she returned home, seemingly perfectly cured.

The vagina is often shortened by these operations, but in this case the vagina retained its normal size, and at its fundus we could see, instead of the cervix uteri, only a small puckered sulcus which marked the opening of the uterine canal.

Mrs. M. returned home with the injunction to report herself every two months to her physician for examination.

Exemption from suffering and the prolongation of life can only be purchased, under these circumstances, by constant vigilance. It is, therefore, necessary to watch all such cases as this from time to time, and whenever a rounded knobby tumefaction appears at the orifice of the uterine canal, or a fungous granulation is seen to spring up, not larger than a pea, we should lose no time in repeating the operation. In case of a mere pearly knob with purple base, it is necessary to incise it, and excise every trace of disease, whether by knife, scissors, or curette, and follow this up with appropriate caustic treatment.

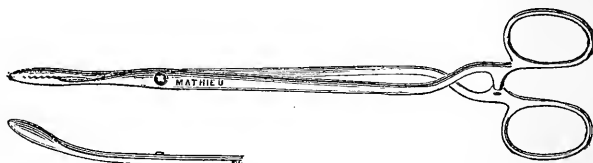
In the last five years Mrs. M. has been obliged to return to New York as many times to have granulations removed. In one instance it was necessary to incise largely the puckered vaginal opening of the uterine canal, and remove by curette granulations amounting in bulk to the size of an English walnut.

Notwithstanding all this Mrs. M.'s general health continues perfect. She has no pain; there is no emaciation, no cachexia, no loss of appetite, and no evidence of constitutional poisoning.

But for these operations there is every probability, nay, certainty, that she would not have survived the first invasion of the disease more than twelve or eighteen months. For eighteen months is about the ordinary duration of this disease. Prof. Fordyce Barker has seen one case that lasted for twelve years, and I have seen one of ten years' duration, and another of six. But in these two there were never at any time great hæmorrhages, nor great wasting from profuse serous discharges. Instead of large masses of granular matter to break down and slough off, leaving large sinuses to distil a septic, ichorous fluid to be absorbed

and to poison the blood, I noticed a small indurated irregular fissure with knobby granulations that gave issue to sero-pus in small quantities, occasionally mixed with blood, all of which found an easy outlet from the vagina. Instead of the ulceration extending up into the body of the uterus, it gradually and slowly encroached on the walls of the vagina. Cicatrization seemed slowly to follow ulceration, till the uterus was gradually drawn down from its position, high up in the pelvis, by the vagina which as gradually shortened, till it had almost entirely disappeared, and the fissure marking the place of the uterine outlet was not more than an inch from the ostium vagina. When large fungoid tumors break down and slough, and when this sloughing extends up into the body of the uterus, then

FIG. 191.



the system becomes rapidly poisoned by the absorption of septic matter, and the patient dies generally in a dropsical state. Again, death may come by some intercurrent disease, such as peritonitis, pneumonia, etc. Matthews Duncan truly says: "The chief causes of death in cancer are peritonitis, uræmia, septicæmia, pyæmia, and complications from diseases of veins or important viscera."

In my method of operating for epithelioma of the cervix, we need the speculum (Sims's), a proper knife, medium-sized scissors slightly curved on the flat, curettes, a dozen or more sponge probangs, tenacula, volsella, lock forceps for seizing arteries (Fig. 191), and styptic cotton-wool.

With proper precautions, and with appropriate means of arresting hæmorrhage, there can be none to any serious extent in operations for epithelioma. If the tumor have any degree of solidity, there is no danger of hæmorrhage at all. If it be soft and easily scooped away with the curette, the bleeding may be profuse.

But when it is soft and ready to break down, we have no alternative but in the curette, whether the bleeding be profuse or not. But there is never any danger if we have

prepared ourselves to control the hæmorrhage, it matters not how furious it may be.

Let us suppose that we are called upon to operate on such a case as is represented in Fig. 188 or Fig. 190.

The patient, properly prepared and etherized, is to be placed on a table in the left lateral semi-prone position; the Sims speculum applied, the tumor is to be seized with volsella, pulled forward, and held firmly. We then begin with the curette to break down and draw out the cancerous masses as fast as possible. But if fortunately the tumor holds well together, then we take the scissors and begin to cut loose the tumor from the cervix uteri anteriorly and laterally. When the tumor is rather firm and requires the knife or scissors for its removal, the bleeding is not severe, and constant sponging by the assistant keeps the vagina tolerably clear of blood. If the circular artery should be cut, we clasp it with a pair of spring forceps (Fig. 191), the bleeding ceases instantly and we proceed with the operation, the forceps hanging from the vagina and still holding the artery. Sometimes we may have two spring forceps in use at one time, and now and then three. But this is very seldom. And when the forceps are removed we usually find that they have succeeded in controlling the hæmorrhage entirely. Let us suppose that we have removed all that it is possible to remove with scissors. We might think the operation finished, but it is not so. With sponge probangs we clean out the cervical cavity made with scissors, and we pass the index finger into it, and if we find any indurated structure, whether the size of a grain of wheat or much larger, it must be removed.

Just as long as we can detect any of this indurated tissue by the touch, just so long must we continue to excise it, till the walls of the uterus are entirely freed from it, and have the soft elastic feeling characteristic of the natural structure. We remove this indurated tissue piecemeal, some pieces being not larger than a barleycorn, while others may be as large as the little finger-nail. This is by no means difficult. While the patient lies in the left lateral semi-prone position, the uterus is drawn down almost to the ostium vagina by a tenaculum or forceps; the left index-finger is passed into the uterus; the sense of touch immediately detects the horny, gristly, abnormal tissue, which is hooked up by a tenaculum, raised up to view, and cut out with a knife. My uterotome (Fig. 192) answers this pur-

FIG. 192.



pose admirably. Any narrow-bladed knife with a long handle will do as well.

This process is to be continued till every portion of gritty-feeling tissue is removed.

When we are perfectly satisfied that all diseased tissue is removed, which is known by the touch, we then, with scissors or knife, trim the edges of the cavernous opening made by the operation, whereby the vagina becomes continuous with what remains of the supra-vaginal cervix uteri. But the cervix, properly speaking, infra-vaginal portion, will be found to have been wholly removed with the diseased mass.

The hæmostatic forceps, if there are any in use, are to be removed, the parts to be sponged as dry as possible, and quickly filled with styptic cotton-wool, rendered styptic by solution of persulphate of iron. Take liq. ferri subsulphatis, 1 part, water, 3 parts. Mix, and saturate the cotton-wool, and squeeze it almost dry, and then fill the conical cavity made in the uterus by the operation with it. Pack it in tightly and cover it over with other layers of the cotton-wool styptic tightly packed, till the upper third of the vagina is securely tamponed. This is to be held *in situ* by plain cotton-wool wet in carbolized water, packed in till the whole vagina is firmly tamponed.

The patient must not be removed from the table to the bed as long as there is any oozing of blood. We must be sure that it is completely arrested. If we are in any doubt about it, a portion or even the whole of the tampon must be removed, and be reapplied anew, taking care to do the tamponing in a more thorough manner.

The operation over, the patient is put to bed. It is often, almost always, necessary to administer an anodyne, and the catheter must be used as required. In a few hours, perhaps four or five, it may be necessary to remove with the tampon screw a few pieces of the cotton-wool from the lower part of the vagina to take the pressure from the neck of the bladder, and even to relieve pain in the back.

We may remove more of the tampon on the following day. But the portion of tampon that fills the upper part of the vagina, and especially that in the neck of the uterus, is not to be disturbed till the fourth or fifth day. When this is wholly removed, then the conical excavation of the cervix, the real seat of the epitheliomatous growth, is to be filled with cotton-wool wet in a solution of chloride of zinc. Chloride of zinc is soluble in its weight of distilled water. But I usually make the solution thus:

R̄ Zinci chloridi.....	3 v.
Aq. destillat	3 i.
M. ft. sol.	

Saturate cotton-wool in this solution, then squeeze it dry and it is ready for use. Bits of cotton-wool thus prepared with chloride of zinc, the size of an almond, are to be snugly packed into the cervix till it is filled up to the level of the vagina. Then the upper part of the vagina is to be tamponed tightly with cotton-wool saturated with a solution of bicarb. soda.

The chloride of zinc produces intense pain, and it is always necessary to give morphia hypodermically and in sufficient quantities to relieve it.

If the zinc cotton-wool is too wet, the superabundant fluid runs down the vagina and inflames it. It is, therefore, necessary to squeeze it very dry before stuffing it into the cervix.

The cotton-wool wet with a solution of bicarbonate of soda is intended to protect the walls of the vagina against the irritating qualities of the zinc. But it does not seem to do much good. I have tried the albumen of egg, tannin, and other protections that have been recommended to me for this purpose, but with no better results.

It is very desirable to find something that will neutralize the chloride of zinc, and protect the walls of the vagina against its irritating qualities. The chloride produces no permanent mischief, but it is attended with suffering, and it irritates the urethra, thus producing frequent micturition.

The cotton-wool that retains the chloride *in situ* may be removed in part the next day, and wholly in a day or two more. But the zinc wool in the cervix is not to be interfered with till the fourth or fifth day after the operation. For this purpose it is better to place the patient on the table in the left lateral semiprone position, and to use a

Sims speculum of a small size. For the vagina will be found to be so puckered up by the action of the chloride of zinc that a large, or even an ordinary speculum could not be introduced without giving great pain.

When the parts are well exposed, we may or may not remove the zinc cotton-wool from the neck of the uterus. If it is in the least adherent, it is better to leave it for another day, and then it will be removed with facility and without danger of hæmorrhage.

When the zinc wool is all removed, we will find the hollow cone that it occupied smoothly covered over with a cup-shaped slough which may be taken away, sometimes in one entire piece. Again it may break and come away in two pieces. It is usually from one to two millimetres thick, say about a sixteenth of an inch. It is opaque, tough, pliable, smooth, and of a dull pearly-grayish color. It leaves a cavity filled with healthy-looking granulations, which under the daily use of carbolized warm vaginal injections heals up in ten or fifteen days.

It will be seen that the treatment proper after the operation occupies about ten days, and that cicatrization then requires about a fortnight more. The operation divides itself into two stages, that of extirpating the whole of the diseased tissue, and that of filling up the hollow cone made in the cervix by this operation, and of tamponing the vagina to retain the cervical dressing in its place. The only object of this is to arrest all hæmorrhage. If the seat of operation could be cleaned of blood and made sufficiently dry, we might resort to the caustic at once, but that is seldom possible. And so it is necessary to use the iron styptic to arrest all oozing of blood. Once the styptic dressing is made, it will take four or five days to get it away. And we must be careful not to hasten it, for fear of provoking a bleeding which would be the means of procrastinating still further the application of the caustic.

For removing the tampon, pass the left index finger into the vagina, and then pass the tampon-screw, by the side of it, and remove the tampon, a plug at a time, till we take away the desired quantity.

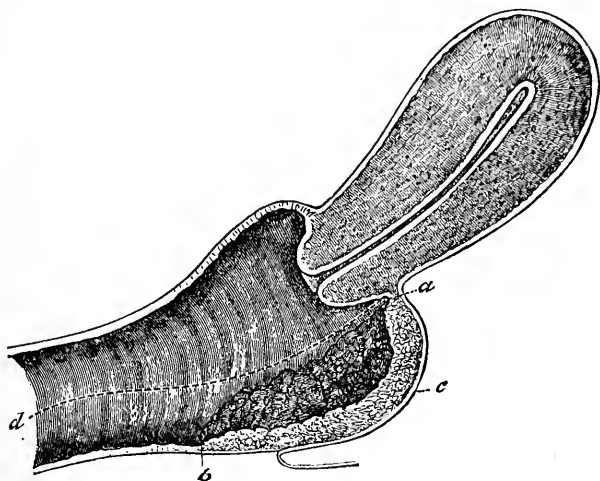
Epithelioma sometimes attacks the walls of the vagina, leaving the cervix uteri intact. I have seen several instances of this sort.

Here is one in which the whole posterior wall of the vagina, below the cervix uteri, was thickly studded with epi-

theliomatous granulations for the space of at least two and a half inches square. They came down to within an inch and a half of the perineum, and extended laterally for about two fifths of the circumference of the vagina.

My father was just on the eve of leaving home for Europe, and turned the case over to me. When the patient was placed in the left lateral semi prone position and the vagina widely dilated by atmospheric pressure admitted by the Sims speculum, the posterior wall of the vagina, from the cervix uteri *a* to the point *b* (Fig. 193), an inch and a half

FIG. 193.



from the perineum, was seen to be thickly covered with epitheliomatous vegetations, extending laterally as already described. (The diagram fails to illustrate the extent of the disease laterally.) These were all curetted till the vagina presented the appearance of healthy structure denuded of its epithelial covering.

It was interesting to notice the tympanitic sound made by the curette as it was strongly scraped along the diseased surface, showing how near it was to the intestinal canal. Notwithstanding the thinness of the membrane which at *c* separated us from the peritoneal cavity, the operation was finished precisely as it would have been done if there had been an inch of solid tissue intervening.

The removal of the epithelial growth was followed by the styptic cotton-wool (iron), and when it came away on the fourth day the chloride of zinc was applied, precisely as we would have done it in the cervix uteri.

It remained four or five days, and when it was removed a nice cup-shaped slough, nearly half the size of the palm of the hand, came away, leaving a smooth, healthy-looking surface which granulated and healed over in a fortnight, under the daily use of carbolized vaginal injections.

It might be supposed that there is danger of the slough extending through the posterior *cul de sac* into the peritoneal cavity, when the chloride of zinc is used in this way. But nature guards against this seeming danger by throwing out fibrinous deposits that protect the peritoneal cavity. And it might also be supposed that there is danger of peritonitis from such treatment, but there seems to be little or none.

The sloughing and consequent cicatrization in this case necessarily shortened the posterior wall of the vagina. Instead of the posterior wall having the capacious dimensions shown by *a c b*, Fig. 193, it presented that shown by the dotted line *a d*.

Instead of a grand curve presenting itself when the patient was placed in the left lateral semi-prone position, with the speculum introduced so as to allow of full atmospheric pressure, we now saw only the short, straight posterior wall as represented by the dotted lines in the figure. Some six or eight months after operation, two little suspicious-looking nodules presented themselves on the walls of the vagina on the right side, at the line of union of the anterior and posterior walls, which I removed with the curette, treating them with the chloride of zinc in the usual way. After this I put the patient on the use of arsenic (Fowler's solution), as so strongly recommended by Drs. Washington L. Atlee and Lewis A. Sayre, and with the happiest effect. For Mrs. A. had had no return of the disease when I last heard from her; she no longer had any cachectic appearance; and she had gained flesh and strength, and considered herself a well woman.

From the effects of the arsenic in this case and in some others in which I have used it, I am disposed to attach great importance to its alterative action in carcinoma.

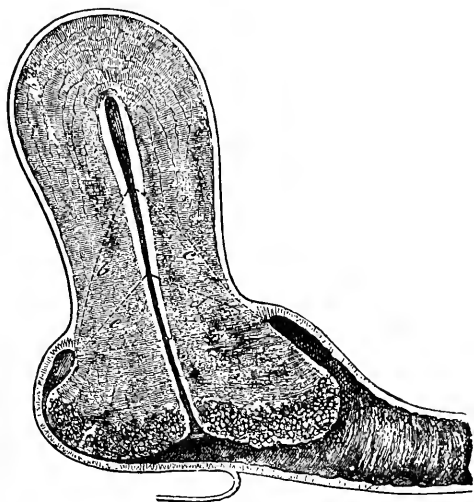
As it can do no harm if administered in such a way and in such doses as not to interfere with the healthy perform-

ance of the digestive functions, I would strongly advise its use after the local disease has been eradicated by surgical treatment.

Amputation of the epithelioma as now performed by most surgeons, or burning its exuberant granulations with the actual cautery, as did Jobert (de Lamballe), Nélaton, and their followers, are procedures that must give way to a more rational and more efficient method of treatment.

Mrs. C., aged about 41, regular, noticed a vaginal dis-

FIG. 194.



charge in 1875, and consulted an eminent surgeon, who found a large epitheliomatous tumor growing from the neck of the uterus. The whole cervix was prolonged into this morbid mass. It was amputated just above the level of the vaginal junction with the cervix in June, 1875. In Jan., 1876, my friend, the surgeon who performed this operation, sent his patient to me. She was a large, fine-looking woman, exceedingly nervous, and very timid of all surgical procedures.

On examination I found the uterus mobile, the body slightly hypertrophied, and the cervix particularly so. The cervix was about two inches in diameter, was truncated, and projected nearly an inch beyond the level of the vagina. It

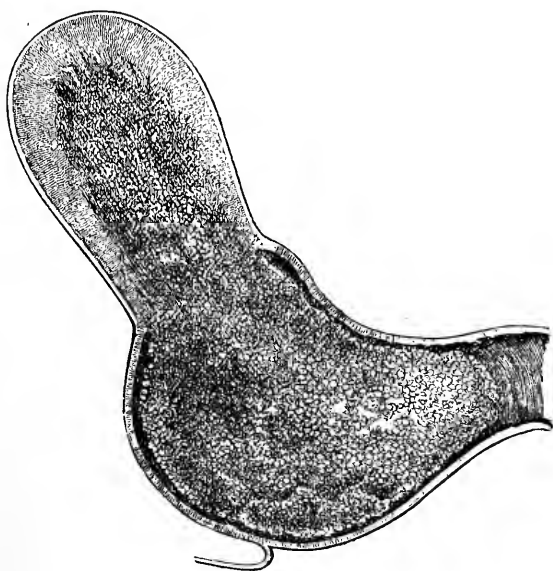
had a rough and knobby feel; did not bleed; but its structure was friable and could be broken down with the finger-nail.

Fig. 194 represents the relative size and shape of the cervix as it projected into the vagina. It would have been easy to amputate the disease at the dotted line *a*, with the *écraseur* or with the electro-cautery. But this would not have eradicated all the diseased tissue. The patient placed in the usual position, most of the intra-vaginal portion of the disease was broken down and scraped away with the curette. The scissors were then resorted to, and diseased tissue was removed to the dotted line *d e*, about half way up to the os internum. The remainder of the excavation *b c* to the os internum was done with the uterotome. The finger was used to detect any hardened diseased tissue, which was then hooked up with the tenaculum raised to the level of the vagina, when it was shaved off with the knife. This process is always a little tedious, for it is necessary to search out diseased structure and remove it piecemeal. We easily recognize it by the touch, for it feels hard and is found in irregular patches, as before said, sometimes as broad as the finger-nail, sometimes larger and often much smaller. In this case this abnormal structure was found all round the inner portion of the cervix and quite up to the os internum. Indeed, it was necessary to exsect by a circular sweep of the knife the entire os internum, taking it out in two semi-circular pieces. When this was finished, the case was treated as already indicated, first with styptic iron cotton-wool to restrain hæmorrhage, and after four or five days with the chloride of zinc. In this case the spring forceps were used once to seize a large artery, probably the circular, which gave no more trouble afterward.

A month after the operation, the depth of the uterus was just two and a quarter inches, instead of three and a quarter, as it was before the operation. Six months after the operation, some epitheliomatous granulations appeared in the neck of the uterus on the anterior portion, which were removed with the curette, and the excavation was treated with the chloride of zinc cotton-wool as before. About nine months after this, it was again necessary to repeat the curetting for a return of fungoid granulations, evidently epitheliomatous. After the first operation, Mrs. C. was put on the use of Routh's solution of the chloro-phosphide of arsenic, which is a valuable remedy, but I fear it is not equal to the Fowler's solution in such cases as this.

How often it may be necessary to repeat these little operations with the curette I cannot tell. But the relief of suffering and the prolongation of life depend upon the prompt manner in which we resort to this process. While the disease is confined to the cervix uteri we have it under control, but when it passes to the body of the uterus, it soon becomes unmanageable, and goes on to a fatal termination.

FIG. 195.



Notwithstanding all this, almost every case is susceptible of improvement by operation, unless it is *in extremis*.

The removal of sloughing tissue with the curette, to be followed by the chloride of zinc or bromine, will often add greatly to the comfort of the patient, by relieving pain, arresting hæmorrhage and the profuse ichorous discharge. If we can do only this for such hopeless cases, we are justified in the attempt.

The most unfavorable cases for operation are those in which the epitheliomatous granulations penetrate deeply into the cavity of the uterus, and which can be easily removed with the curette. Fig. 195 represents just what I

mean. In such cases the mass of epithelioma projecting into the vagina is always easily broken down with the curette. There is but little work for scissors, and none for the knife. The granulations in the body of the womb are removed in great masses with facility, and unfortunately, in all such cases, the hæmorrhage will be profuse, and if the operator is not prepared to arrest it promptly, it might become alarming and even dangerous. It is always of a bright arterial color, and seems to pour out from a thousand little arteries; for doubtless each filament of granular matter has its arteriole hypertrophied according to the nutriment necessary for fungoid growth.

We should always be prepared for hæmorrhage under all circumstances. And before we begin to operate, we should have at least three or four whalebone applicators, ten or twelve inches long, with the small end well wrapped with styptic iron cotton-wool of sufficient length to reach quite to the fundus uteri. If the hæmorrhage is very profuse, the granulations are to be removed with great celerity, and the whole cavity of the uterus quickly tamponed by pushing in one whalebone applicator armed with the styptic cotton, then another by the side of the first, and then a third, and a fourth if necessary. Thus we may have three or four whalebone instruments protruding from the vagina all at once. The hæmorrhage will now be staunched, and we remove one whalebone applicator, leaving the styptic cotton-wool in the cavity of the uterus. Then the second, third, and fourth, if there are so many, may be taken away, and if there is still some fresh blood oozing by the side of these uterine styptic plugs, we arm the whalebone with a thin layer of the styptic cotton, and pass it in by the side of the others, and then another if necessary, till we are sure there can be no more bleeding. When we are sure of this, then we tampon the vagina with the styptic cotton-wool, so as to ensure against the slipping of the plugs from the cavity of the uterus. When the uterus is thus tamponed, we must soon begin to remove the tampon from the lower part of the vagina, for there is always danger of septic poisoning when any considerable quantity of extravasated blood is shut up in the uterus with iron or any other styptic. It undergoes decomposition rapidly, and as it lies in contact with a largely denuded surface, it is placed under the most favorable conditions for rapid septicæmia.

We must, therefore, get this tampon out of the cavity of

the uterus as soon as possible. And if in even twenty-four hours we find the pulse, and particularly the temperature running up, we have no time to lose, and the tampon must come away even at the risk of inducing hæmorrhage. Fortunately under these circumstances we seldom have hæmorrhage after removal of tampons.

During the operation the hæmorrhage is profuse, and we are obliged to resort to heroic means to arrest it. Once arrested, we begin to fear the danger that may arise in consequence of the means adopted for this purpose; and as soon as it is safe to do so we remove the tampon entirely. Thus we see that what was absolutely essential to saving life to-day, may to-morrow become the ready means of destroying it. The judgment of the operator must then be as quick to detect the danger and ward it off in the latter instance as it was in the former.

We often see uterine cancer in such an advanced state that we can do nothing but give anodynes to relieve pain, and take precautions to ensure cleanliness. Each of these is of prime importance. Pain may be borne for a while; but antiseptic injections cannot be dispensed with. For they are essential, not only for the comfort of the patient, but for that of the family and attendants.

Sometimes it is justifiable to submit advanced cases of uterine cancer to operation by the curette, merely for the purpose of removing the sloughing *débris* from the cavity of the uterus, and thereby of preventing fœtor. A cancer without a slough has no odor. Dead matter in cancer produces fœtor, and its absorption produces the cancerous cachexia. We are, therefore, doubly justified in scraping it out whenever the patient is strong enough to take an anæsthetic.

Pain is not commonly an attendant on cancer in its early stages. It belongs to a later period, characterized by inflammation and its products. But come when it may, it soon becomes a prominent symptom demanding prompt attention.

Whenever it prevents sleep, or by its prolonged continuance exhausts the nervous system of the patient, we must control it. Opium in some form is the best of all anodynes in this disease. We may give laudanum by the rectum or the mouth, or we may give some of the salts of morphia by the mouth or hypodermically.

Some patients will prefer McMunn's elixir of opium;

some Squibbs's denarcotized laudanum, and others chlorodyne. When the patient once resorts to opium, she will be obliged to continue it during the remainder of her brief existence. Though capable occasionally of doing mischief, it is in the majority of cases a divine gift.

It is only when the uterus becomes fixed in the pelvis by the exudation of organized lymph that great pain is experienced. The pain is evidently the result of amalgamation of the nerves of the parts with the products of inflammation which produce a neuromatous mass. The pains are frequently of a periodic character, often benefitted by quinine, and as before said, always demand the use of opiates.

We cannot account for severe pain supervening during the progress of this disease, except on the principle of the neuroma. And we find in the inflammatory induration of tissue all the elements necessary to constitute this abnormal structure.

In 1876 I attended the meeting of the British Medical Association at Sheffield, and read before the Obstetrical Section a paper on my method of operating for epithelioma of the cervix uteri; after which I was invited by Dr. Watson, of Peniston, to operate the next day on a case of his. The patient was about thirty-three years old. The upper half of the vagina was filled with a large cancerous mass that bled easily on touch. It involved the greater part of the cervix, and was about the size of a small Sicily orange. I was assisted by Dr. Kidd, of Dublin, and by my countryman Dr. Horatio R. Storer. It was agreed that we should preserve samples of diseased tissue from different parts of the epithelioma for microscopical examination. After breaking down and cutting away the bleeding granular mass that filled the vagina, we found diseased tissue extending up the cervix. It even extended to and around the os internum. The cervix was removed conically up to the os internum, and as the peculiar indurated cancerous tissue was found encircling the os internum, it was removed in two semicircular pieces. There then seemed to be no more cancerous tissue to exsect, and the excavated cervical cone was filled with styptic (iron) cotton-wool, and the case treated as before described.

On the following day, specimens of the tissue removed were submitted, with the history of the case and operation, to the Obstetrical Section of the British Medical Associa-

tion, and these were referred to Dr. James Ross, of Manchester, for microscopical examination.

The consultants did not think it necessary to submit portions of the tumor projecting into the vagina for examination, as there could be no question about its nature. The question to be solved was this: I insisted that the indurated gristly and gritty feeling tissue removed from the cervix and around the os internum was of malignant nature. If it was, then my method of exsection was the proper one; if not, then exsection of the indurated abnormal tissue of the cervix was not necessary. To this end, two specimens were submitted to the section and referred to Dr. Ross.

1st. Indurated tissue from the supra-vaginal portion of the cervix, and

2d. Indurated tissue from the circumference of the os internum.

The following is Dr. Ross's report:

To the President of the Obstetrical Section of the British Medical Association.

SIR: Dr. Thorburn having handed to me two parcels containing fragments of tissue; and having, along with Dr. Atthill (President of the Section), explained that those in No. I. were removed by Dr. Marion Sims from the cervix uteri, after he had previously taken away a mass of what was supposed to have been epithelioma, and that those in No. II. were removed by him from the circumference of the os internum uteri, I have to report that the microscopical appearances obtained from an examination of these specimens are as follows:

No. I.—The fragments of tissue in this parcel contained several hard nodules which felt like shot when pressed between the finger and thumb. Sections of these nodules showed that the healthy tissue was infiltrated by oval, nucleated cells about the $\frac{1}{700}$ of an inch in diameter. These cells were generally arranged in a circular manner, so as to form "nests," but were not so compressed as to have lost their distinctness of outline. These cells were also observed, although they were not so numerous, in the tissue surrounding the nodules, but sections were obtained from the tissue at a distance from the nodules, in which no cells could be seen.

No. II.—In some of the sections made from the tissue in this parcel no nucleated cells were met with, but in one

portion, where a nodule was felt between the finger and thumb, distinct "nests" of nucleated cells were observed.

(Signed)

JAMES ROSS.

MANCHESTER, August 4th, 1876.

Dr. Ross's report confirms others that I have had made, but I give his alone, because he is recognized as one of the most careful and accurate microscopists in England.

His report shows that the tissue removed from the cervix uteri was infiltrated with "nests" of abnormal structure.

The inference is clear, that this must be wholly removed to ensure a successful result. But it may well be asked: "Is there no immediate danger from these seemingly heroic exsections?" I am amazed at the impunity with which they are generally performed. But they do sometimes terminate fatally.

Prof. Böhm, Superintendent and Surgeon to the Rudolf Hospital, Vienna, invited me to operate on a case of epithelioma of the cervix uteri in his wards, and the following notes have been furnished me:

"Marie Punick, aged 41, the mother of two children, each born in the eighth month of pregnancy, enjoyed good health till about three months ago. Her menses had always been regular, lasting two days, till the last of December, '77, when she was taken with metrorrhagia and with pain which compelled her to enter our hospital, where we found her in the following condition:

"She is well formed and well preserved, but has a pale-yellow tint of the skin. The pulse and temperature are normal.

"Nothing abnormal in the thoracic organs. The uterus is a little enlarged and mobile. The vaginal mucous membrane shows great anæmia. On the anterior lip of the uterus there is a tumor the size of a large nut, which is hard to the feel and knobby on the surface. On the right edge of the posterior lip there is a small nodosity."

[Fig. 196 is from a drawing taken from nature by Dr. Heitzmann the day before the operation.]

"The operation was performed by Dr. Marion Sims, on the 19th of March, 1878.

"The patient took chloroform. At night the pulse was 93, and temperature 37° C. She complained of headache and had some bilious vomiting. The abdomen was somewhat sensitive to the touch. She got ice and opium.

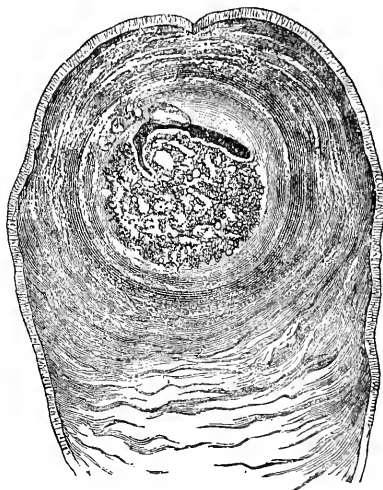
20th.—Pulse, 115; temperature, 37.6° C.; tampons removed; vomiting continuous; abdomen slightly tympanitic.

21st.—Pulse, 112; temperature, 37.4; vomiting more frequent.

22d.—Pulse filiform; lower extremities cold; abdomen tympanitic and very tender to the touch, and at midday she died.

Post-mortem.—"Body of slightly jaundiced tint; the head somewhat œdematous; the trachea full of bilious mucus,

FIG. 196.

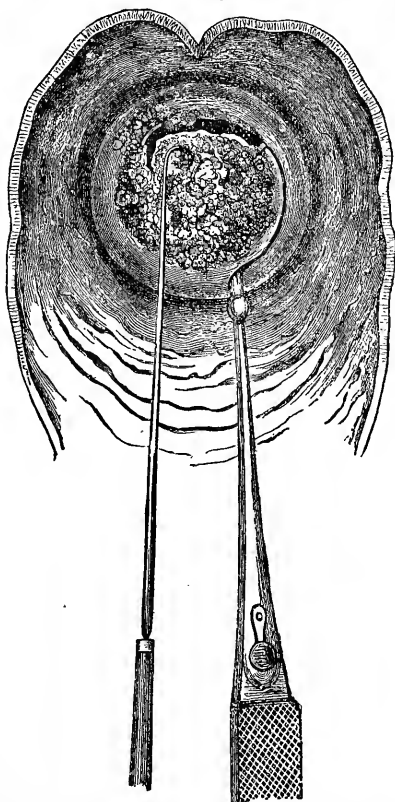


same in larynx and pharynx; thyroid gland somewhat colloid. Both lungs adherent at summit, otherwise free. Parenchyma pale and œdematous. In the pericardium a few cubic centimetres of reddish serosity. Heart of normal size, well contracted. In the abdominal cavity there were about 500 cubic centimetres of sero-purulent fluid. The peritoneum is injected and covered everywhere with layers of fibro-plastic exudation. The liver is somewhat smaller than it should be, firm and granular.

"The spleen is fifty per cent larger than it should be. The kidneys pale. The stomach and intestines a little distended. In the bladder there was a small quantity of clear

urine. The uterus and its annexes were intimately adherent to the surrounding parts. The two Fallopian tubes were dropsical. The ovaries are normally crenated. In

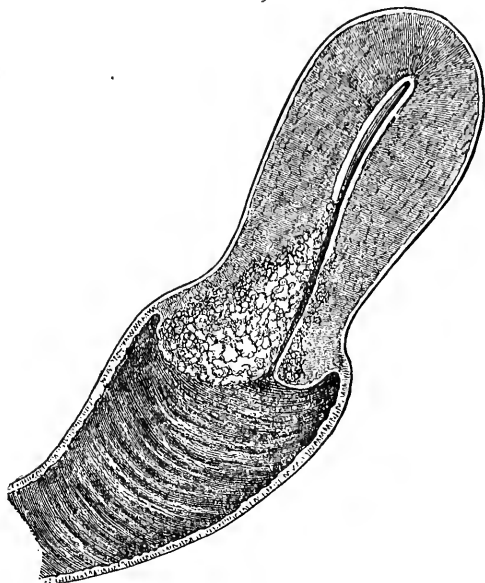
FIG. 197.



the left there is a cyst the size of a nut; its contents sanguinolent. The os tincae, the neck of the uterus, and the lower part of the corpus uteri were wanting. In their place there was a cavity, now suppurating, which is limited by the peritoneum and by a thin muscular layer of the uterus. This cavity was discolored by sesquichloride of iron used in the tampon. It communicated with the peri-

tonem by several little openings the size of a pin's head, leading to the Douglas *cul de sac*. These little perforations were in the posterior wall of the cervix, about two centimetres above the level of the posterior wall of the vagina, and near the deepest point of excavation. Around the perforations the peritoneum was stained with the sesquichloride of iron. By minute examination (microscopically) of the pelvic lymphatic glands, we found some of

FIG. 198



them containing pus, but nowhere did we find any trace of cancer."

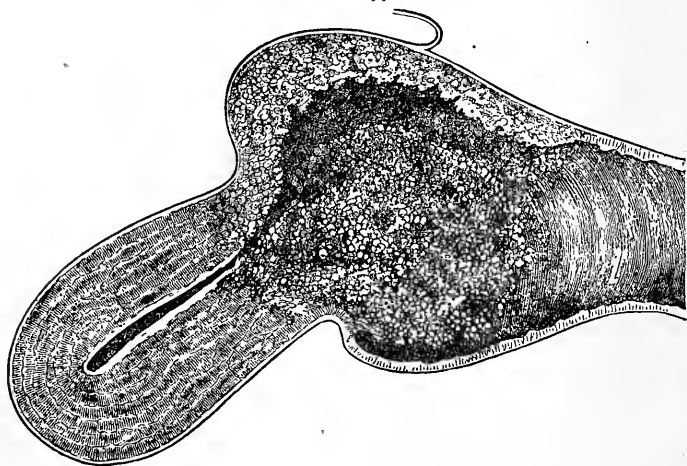
Fig. 197 represents the initial step of the exsection.

We seldom see an epithelioma of the cervix uteri at such an early period. Judging from its history and from its appearance, it had existed barely three months. The operation was very easy and was quickly done. There was but little bleeding. It was just the case in which we could promise a certain cure. Everything was favorable to success: the age and condition of the patient, the limited extent of the disease, and the thoroughness of its removal,

all justified me in giving a positively favorable prognosis. I was therefore greatly surprised when I visited my patient the next morning to find her in a critical condition.

Fig. 198, p. 303 gives a good idea of the extent of the disease. Anteriorly it reached to the os internum. The posterior segment of the cervix was a little more diseased than is shown in the cut. All the diseased structure was removed with the knife aided with the tenaculum. The sense of touch was the guide. Wherever we find gristly tissue, it is to be hooked up with the tenaculum

FIG. 199.



and cut out. This process was here followed up till the whole cervix was exsected, leaving only the peritoneal covering lined with a thin layer of uterine tissue.

I also operated for Prof. Salzer on a case of epithelioma of the cervix uteri. His case was most unfavorable for operation, and was attended by an accident which it is well to know how to remedy.

This diagram, from a drawing made by Dr. Heitzmann, tells the story of its extent and relations. The anterior lip of the os tincae was prolonged into a large epitheliomatous tumor, bleeding easily on touch. The posterior lip was destroyed, and its place occupied by fungoid granulations which extended up into the cervix, and down on the posterior wall of the vagina to within two inches of the peri-

neum. The diagram is placed upside down, to show the parts as they would be seen in the left lateral semi-prone position with the Sims speculum.

With the curette I removed the granulations from the posterior wall of the vagina. Part of the projecting mass from the anterior portion of the cervix was removed with the curette, the remainder with scissors. After this was cut away to the level of the vagina the anterior portion of the cervix was hooked with a tenaculum, pulled forward, and then I began to exsect it with the uterotome. While I was cutting away this cervical tissue, a little glistening fatty body, about the size of a bean, floated out on the seat of operation which I at once recognized as a bit of omental or mesenteric fat. Then I knew that the peritoneal cavity had been opened, and by passing my finger in I discovered that the posterior vaginal *cul de sac* was wholly torn loose from the cervix uteri. I thought at first that I might possibly have made the opening with the knife. But on minute investigation it was seen that this hypothesis was out of the question, as the knife could not have passed beyond the canal of the cervix, and as the vaginal attachment was torn loose from the posterior portion of the cervix in a manner to correspond exactly with its semicircular border. This accident was produced by the distal end of the speculum, which, pulling the fornix vaginæ back too forcibly toward the rectum, ruptured its already weakened tissue.

My first idea was to cut away all that portion of the posterior vaginal wall that had been the seat of the disease, and then to pull the uterus forward, and unite the two by suture. But by passing one finger in the rectum and another along the posterior wall of the vagina, I discovered that the denuded or diseased portion of the vagina extended forward along the rectum for at least an inch and a half. So I could not carry out my original plan, and was obliged to unite the cervix uteri to the border of the vaginal *cul de sac*, from which it had been torn. I then passed four silk sutures through the posterior border of the cervix and the corresponding portion of the lacerated vaginal *cul de sac*. Two or three ounces of blood had run into the peritoneal cavity through this accidental opening. The distal ends of the sutures were thrown up over the hip and held there; the proximal ends were pulled forward over the anterior wall of the vagina and held; then the middle portion, extending antero-posteriorly across the wound, were pulled apart so

as to permit the easy passage of sponge probangs into the peritoneal cavity; then a sponge probang was forcibly pressed on the bleeding cervix to control the oozing of blood, while the peritoneal cavity was thoroughly cleaned out by rapidly passing in one sponge probang after another. After a little while the sponge probangs were passed in and drawn out dry and clean, then the sutures were quickly pulled, and the utero-vagino-peritoneal opening was closed, and held so by tying each suture separately. The ends of the sutures were left long and hanging from the vagina. The operation was then finished just as if this accident had not occurred. The excavated cervix was filled with iron cotton-wool, and the vagina was tamponed as usual. The next morning the tampons were removed, and the patient speedily recovered from the operation, and in due time left the hospital.

My Vienna experience was unfortunate, but most instructive.

Prof. Böhm's case at the Rudolf Hospital was unusually favorable for operation, and yet she died of peritonitis the third day after operation. *Post mortem* showed that the peritonitis was due to minute perforations through the posterior portion of the cervix which communicated with the peritoneal cavity. What caused these little perforations?

I (and my son Dr. Harry Marion Sims) had performed so many operations of this kind, and with such impunity, that it did not occur to me that anything but good could come from forcible tamponing. I looked upon it as powerful to control hæmorrhage, and as dangerous only in producing septicæmia if the tampon were allowed to remain too long *in situ*. And this we could easily control by removing it and using antiseptic injections.

In Prof. Böhm's case, the little perforations through the posterior wall of the cervix into the peritoneum were made by forcible tamponing. There is every certainty that the tissue yielded to the packing of the tampon.

In each and in every case, the force exerted in strongly tamponing the cavity of the excavated cervix would inevitably be expended against the posterior wall of the cavity, and not against the anterior, which is out of the line of action.

The forcible impaction of the excavated cavity produced an immediate laceration of tissue at the point of greatest pressure, terminating fatally by peritonitis. Death could not have occurred if the tampon had not been used.

An important lesson is thus sadly and indelibly impressed upon my mind, and I wish others to profit as well by it.

The accident that occurred in Prof. Salzer's case, the disruption of the posterior wall of the vagina from the cervix uteri, was unavoidable. No one was to blame for it. The vagina at its uterine attachment was so weakened, and so nearly destroyed by cancerous degeneration that it required but slight traction to tear it asunder.

It was fortunate that this accident was promptly and thoroughly repaired.

The following inferences seem to be deducible from the facts set forth in this paper:

1. Do not amputate or slice off an epithelioma of the cervix uteri on a level with the vagina, whether by the *écraseur* or the electro-cautery.

2. Exsect the whole of the diseased tissue, even up to the os internum if necessary.

3. Arrest the bleeding, when necessary, with a tampon of styptic iron or alum cotton-wool.

4. Be careful not to apply the tampon with such force as to lacerate the excavated cervix uteri.

5. When the styptic tampon is removed, cauterize the granulating cavity from which the disease was exsected with chloride of zinc, or some other manageable caustic capable of producing a slough.

6. After the removal of the caustic and the slough it produces, use carbolyzed warm-water vaginal douches daily till cicatrization is complete.

7. After the cure, put the patient on the use of arsenic as a protection against the cancerous diathesis, and urge the importance of examination every two or three months for the purpose of detecting the recurrence of disease.

8. Then if fungous granulations or knobby protuberances not larger than a pea are found, lose no time in removing them; and treat the case afterward with caustic just as in the first instance.

9. Almost every case may be benefited by operation, even when there is no hope of giving entire relief.

Dr. Reamy, of Cincinnati, performs this operation by exsection and not by amputation. We both worked out this method of operating about the same time independently of each other, and we both published our results about the same time. I have always exsected the cervix piecemeal.

But Dr. Reamy often takes it out with scissors in one solid piece, reaching quite up to the os internum.

During a visit to Koeberlé in September, 1877, he informed me that he now never amputates the epitheliomatous cervix uteri; but he exsects it quite up to the os internum if necessary. He operates in the early stages of the disease, and uses Paquelin's thermo-cautère, removing a conical plug from the cervix. Dr. Wilson,* of Baltimore, has recently performed this operation in the same way, and he has proven that the Paquelin cautery can be successfully used in the Sims position with the Sims speculum. This is one of the most important improvements as yet made in this operation.

Mr. Spencer Wells also exsects the cervix uteri for incipient carcinoma with the Paquelin cautery.

I have no prejudices in favor of my own plan. But we can by the sense of touch follow up the diseased tissue and remove it all; while by the cautery there will always be a doubt whether we have done this or not. It is possible that the actual cautery may be preferable to the potential after the diseased tissue is exsected. The point that I insist on is, that the disease should be exsected and not merely amputated, whether this be done with cutting instruments or the actual cautery.]

Dr. Lombe Atthill states that he has adopted Dr. Marion Sims's plan in two cases with great benefit, and he considers it a valuable procedure when the disease is detected early. Dr. Playfair states also that he has found Sims's method feasible and advantageous.

Dr. W. H. Baker† (Boston, U. S. A.) has practiced very successfully a modification or extension of Dr. Marion Sims's operation. The cervix is seized and drawn down. The portio vaginalis is then cut into anteriorly with scissors, and the supra-vaginal anterior cervix separated from the bladder by scissors and forefinger. The same incision is then made posteriorly, and the posterior supra-vaginal cervix separated from peritoneum to level of internal os uteri. Next the cervix is separated at the sides. This being done the uterotome is employed, and a funnel-shaped portion of the body of the uterus is cut out. This is like Sims's operation, with the exception that it is here possible

* *Maryland Medical Journal*, Dec., 1878.

† "Treatment of Cancer of the Uterus."—*Amer. Journ. of Obst.*, April, 1882.

to remove more of the body of the uterus. The result is that the cervix is entirely removed, as well as nearly or quite one half of the body of the uterus. The actual cautery at a red heat is then everywhere applied, which requires time to do effectually. Perfect quiet, catheter every six hours, opiates to confine bowels for ten days. In twelve cases of operation, where the disease appeared capable of entire removal, the following were results: Seven were living and well after periods of twenty-nine, twenty-seven, twenty-two, twenty-one, eighteen, eighteen, and eleven months respectively.

The removal of the entire uterus for cancer has been of late rather frequently performed. Dr. Blundell in 1828 removed the uterus *per vaginam* in three cases. Freund, of Strasburg, has lately removed the uterus by abdominal section in a considerable number of cases. In Sept., 1878,* Freund had operated ten times with five deaths.

The method adopted by Freund is as follows: The abdomen is opened as in ovariectomy. The uterus is drawn up out of the pelvis by means of a needle and thread passed through the fundus of the uterus. Before the uterus is removed three ligatures are inserted on each side, securing the broad ligament in three divisions, and when the uterus has been cut away the ends of these ligatures are brought out at the vagina. The peritoneal edges of the broad ligaments are also secured by sutures so as to more completely close the aperture between the vagina and abdomen.†

One of the difficulties attendant on the extirpation of the uterus is the liability to ligature the ureters. In two cases which have been related this occurred.

The operation has undoubtedly been performed successfully in a certain number of cases. The results obtained by other operators have not been so good as those of Freund, and probably the operation is capable of being made less immediately dangerous than it at present appears to be. We are yet, however, not in possession of facts which are encouraging as to the final result of the operation, or as to its effects in procuring a notable prolongation of life.

As a *cauterizing application* in cases of cancer of the cervix

* *Klin. Vorträge*, No. 133, for April, 1878; see also *Obst. Journ.*, No. 72, p. 817.

† See Mr. Spencer Wells's Lectures, Roy. Coll. of Surgeons, *Brit. Med. Journ.*, July, 1878.

uteri, bromine in solution has been successfully used by Dr. Routh and Dr. Wynn Williams. The method of employing it, as described by Dr. Williams,* is to inject into the tissues of the affected part a strong solution of bromine in spirit (twelve grains to a drachm) by means of a syringe, at properly selected situations. The vagina requires to be well protected from the action of the caustic, and it is injected about half an inch deep. Disintegration of the parts injected rapidly follows. The bromine must be previously carefully mixed with the spirit. The syringe is of glass with a platinum point. For acting on a broader surface cotton-wool wrapped round a piece of stick and dipped in the solution; or a piece of cotton-wool soaked therein and kept in apposition by means of a little gutta-percha cup, are employed. In all these procedures the vagina is protected by cotton-wool soaked in solution of carbonate of soda. Following the treatment a weaker bromine solution is used as a lotion daily.

We now come to the question of the palliative treatment of cases of uterine cancer, where surgical measures are inapplicable. There are three conditions to the relief of which our attention is necessarily more particularly directed—the pain, the hæmorrhage, and the discharge; and, besides relieving these, we have to devise means for maintaining the functions of the body generally in a state of activity, and for dealing with the many secondary evils likely to present themselves in the course of this disease.

The *hæmorrhage* is to be checked, if slight, by injections of iced water into the vagina and into the rectum; if more severe, by application of perchloride of iron or tannin, and by the actual cautery, or, in very severe cases, by plugging the vagina, using a saturated solution of perchloride of iron in glycerine, the solution being applied by means of a sponge to the bleeding surface, and withdrawn subsequently by means of a string attached to the sponge (Simpson). Tannin in a fine powder, or tannic acid, may be applied through a small tube, or, better still, in form of a pessary. Tincture of matico is highly spoken of by some authors. If fluids are injected to check the hæmorrhage, care must be taken that they actually come into contact with the bleeding surface. In cases of cauliflower excrescence not admitting of amputation of the cervix, the soft bleeding

* "On Cancer of the Uterus," etc. Renshaw, 1868.

masses have been sometimes broken up with the fingers, and tincture of iron injected into the centre, and with the effect of checking hæmorrhage and discharge. Dr. Hicks states that he has found a saturated solution of alum holding in suspension tannic acid, applied every day, very effectual in reducing the more tender parts of the tumor in cases of cauliflower excrescence. In some cases which have fallen under my own notice, I was able to effect the same object by applying daily a sponge dipped in strong solution of lunar caustic. To *prevent* hæmorrhage, the patient should, whatever be the nature of the disease, be kept quiet, and especially before and during the catamenial period. Brandy or other stimulants must be given to sustain the patient's strength; and very considerable quantities may be necessary to avert instant dissolution when the hæmorrhage is very profuse. Opium may be very advantageously given at the same time.

The *discharges* in cases of uterine cancer are often very offensive, owing to the decomposition of the detritus from the ulcerated surface. The frequent use of the douche, by means of which a stream of water is made to pass gently over the affected surface, is the best means which can be adopted for obviating the unpleasantness of the discharge in ordinary cases. Care is very necessary not to push the extremity of the tube against the ulcerated surface, or bleeding may occur. The washing out of the vagina should be performed frequently. The temperature of the water used should be that which is most grateful to the patient. It is often necessary to use a disinfecting fluid as an injection in order to get rid of the offensive fœtor. For this purpose diluted carbolic acid, carbolized oil, Condyl's fluid, chloralum, are all available. Creosote may also be mentioned as a powerful deodorizer. To render the discharge less offensive, frequent ablutions with or without the use of disinfectants are very necessary; other indications are thus at the same time fulfilled.

The *pain* in cancer of the uterus is very severe, often exceedingly so, and it must be relieved. For this purpose opium, in that form which is found by experience to be most suited to the patient, must be given, the dose being regulated and the form varied according to circumstances. It is not uncommonly found necessary to give opium in very large doses, the patient having become so habituated to its use that a small dose has no effect whatever. Opium

is often conveniently given in form of suppository or pessary: I have found it most effective when administered in a lavement. Opium, in some form or other, is generally necessary, but other medicines are frequently of great service as accessories. Ether, chloroform, or the two latter combined, cannabis indica, conium, hyoscyamus, etc., are all and each of them of use in certain cases. The application of carbolic acid to the ulcerated surface was suggested by Sir J. Y. Simpson.

The *general nutrition* of the patient demands careful attention. The digestive organs are frequently in a very disordered state, the patient having little or no appetite, and the bowels being extremely constipated. The first and most important part of the treatment consists in feeding the patient frequently and with easily digested food. And we can only find by experience what is best. Milk is often a valuable article of diet in such cases; wine or other alcoholic beverages are generally required. For the relief of nausea and thirst, ice placed in the mouth frequently is most beneficial. The bowels require careful attention; small doses of castor-oil, frequently given, are the best means of inducing regularity in this respect, but occasional copious enemata are often necessary to unload the distended rectum. Two or three drachms of Rochelle salt, with a little tincture of senna, form a useful occasional aperient draught. The act of defæcation is often exceedingly painful, and patients postpone it as long as possible; the evil may proceed to a very extreme extent if the patient be not watched.

The state of the urinary organs frequently calls for relief. In those distressing cases where toward the end of the disease fistulæ form between the vagina and the bladder, or between the uterus and rectum, or vagina and rectum, but little can be done except to observe great cleanliness. For the relief of the irritability of bladder, Dr. West thinks highly of Vichy water. Uva ursi or pareira, with a little liquor potassæ, are medicines of established utility in such cases. The triticum repens, highly recommended by Sir Henry Thompson in the treatment of cases of irritable bladder in the male sex, will be found useful.

The question as to the propriety of giving, to the patient herself, expression of our opinion as to the prognosis in a case of uterine cancer, is a matter of great delicacy and importance. Even in cases where there is literally no hope

of saving life beyond a limited time, it is yet occasionally difficult and even improper to say so to the patient. There are few individuals possessed of sufficient fortitude to be told, at once, that they must necessarily die; and in many cases to deprive the patient of all hope is to still further shorten her brief existence. It is hardly necessary to urge the importance of abstaining from giving, *in any degree*, an unfavorable prognosis in cases where the diagnosis of cancer is not very well established. Experience has shown that the best observers have been deceived in their prognosis, the case not always turning out so unfavorably as they had expected. It is easy to decide too soon; by waiting a little doubts are gradually dispelled.

The question of the treatment of *cancer of the vagina* and *cancer of the bladder* requires no extended notice. The treatment required in cases of cancer of the vagina is identical with that of cancer of the uterus, the symptoms being essentially the same. Little benefit can be expected from surgical treatment. In *cancer of the bladder*, generally secondary to cancer of the uterus or vagina, the treatment, beyond what is necessary in all cases of cancer, consists in relieving the patient as much as possible from the sufferings attendant on the irritable condition of the bladder usually present, and in providing means for remedying, as far as possible, the inconvenience arising from fistulous openings in the vesico vaginal septum. Occasionally it has been found necessary to perforate the bladder when the orifice has been occluded by cancerous growths.

ASSOCIATION OF PREGNANCY WITH CARCINOMA OF THE UTERUS.

It occasionally happens that this association is met with, and the various important questions arising out of such association have to be considered.

Recently (on October 11, 1881) the following important case came under my notice:

The patient was 37 years old. She had had five children; the youngest was sixteen months old, but there had been a bad miscarriage ten months ago. The patient was at the time she presented herself to me, again pregnant, probably five months. [It proved to be nearly six months.] The patient was unmistakably affected with epithelioma of the cervix uteri, the vaginal portion being hypertrophied and

presenting a very distinct warty projection running round it like an irregularly shaped cord just outside the orifice of the os uteri, but the tissues above the vaginal portion seemed to be free from infiltration. She was in a very depressed and prostrate condition, having had little sleep, and having suffered from almost continuous pain in the pelvic region for several weeks. There was a brownish irritating and offensive discharge. It was evident that the disease was rapidly progressing, but as yet it was limited to the cervix uteri. The patient had already seen Mr. Spencer Wells, and, in accordance with my advice, a consultation was held with him, the object being to ascertain what was best to be done. One course of action which suggested itself was the speedy induction of abortion, followed as quickly as possible by amputation of the cervix uteri. Another was to remove the whole uterus at once. A third course would have been to allow pregnancy to proceed to the viable period, then to effect delivery, and afterward deal with the cervical disease. The objections to this latter course were that, the disease being in rapid progress, it was probable that delivery *per vias naturales* of a viable child could not be counted on. The cervical infiltration and thickening were fast increasing, and the operation of vaginal delivery would imply laceration of the cervix, and other possible dangers, while in order to secure a live child the Cæsarean section might even be rendered necessary. Moreover, the delay in procedure would allow the patient to be subjected for some time longer to the deadly influence of the disease. The first and second procedures were discussed. On the one hand was the extreme danger of the immediate excision of the whole uterus, giving, however, a better chance, in the event of the patient's surviving the operation, of a considerable prolongation of life. On the other, the possible bad effects of a premature induction of labor, followed by necessity for the further operation of excision of the cervix. Mr. Wells expressed himself very hopefully as to the result of the immediate excision plan; and after due discussion it was resolved that Mr. Wells should undertake the operation. Accordingly, on October 21, 1881, Mr. Spencer Wells extirpated the uterus entire by the abdominal method. The case was reported in full to the Royal Medical and Chirurgical Society, November 22, at which time the patient was reported as quite convalescent from its effects.

The remarkably successful result of this operation, which is the first in which the gravid uterus had been removed entire, in this country, will doubtless encourage further attempts to deal with similar cases in a radical manner. And the opinions expressed on the reading of this case were of a highly approving character. The success of Freund's late operations, together with those of Hégar and Kaltenbach for the removal of the non-gravid carcinomatous uterus, encouraged the adoption on the above occasion of the procedure of removing the whole uterus. The success which has attended what is termed Porro's operation was a further incentive. Porro's operation consists in removal of the uterus from above, in cases of pelvic deformity, and as an alternative to the Cæsarean section; but in Porro's operation the cervix uteri, or the greater part at all events, is not removed. In the case on which Mr. Spencer Wells and myself consulted together, the operation consisted in the removal of the *whole* of the uterus. One of the greatest dangers of the operation is that of injuring the ureters. In Mr. Spencer Wells's method of tearing the uterus away rather than cutting, it seemed to me that this danger was materially reduced.

The conclusion to be drawn from the above case is that the gravid uterus at six months of pregnancy may be entirely removed and the patient recover from the effects of the operation. It is true that the case was a favorable one for operation, but it seems on the whole probable that similar cases are not unlikely to be met with again.

CHAPTER XLIV.

TUBERCLE OF THE UTERUS: DISTENSION OF THE UTERUS BY FLUID (HYDROMETRA AND HÆMATOMETRA) OR BY GAS (PHYSOMETRA).

TUBERCLE OF THE UTERUS.—Pathology and Treatment.

DISTENSION OF THE UTERUS WITH FLUID (Hydrometra and Hæmatometra).—Pathology and Treatment.

DISTENSION OF THE UTERUS WITH GAS (Physometra).

TUBERCLE OF THE UTERUS.

This is an exceedingly rare disease. When tubercle is found in the uterus, it is generally present in other organs.

There appears to be a particular and unusual tendency to the formation of tubercle in the uterus after parturition, and during the time the uterus is undergoing that reduction in bulk and change of texture peculiar to this period.

The part of the uterus which is usually the seat of tubercle is the inner surface—when occurring after child-birth, at the seat of the placental insertion—and from the mucous lining it spreads into the thickness of the uterine wall. The final effect may be a considerable increase in the bulk of the uterus. The tubercular matter appears in the form of small grayish or grayish-yellow granulations; the mucous lining is also much thickened and looser in texture than usual. There is a discharge from the uterus of a dirty yellow or brown color. The disease does not appear to be attended with much pain.

Rokitansky relates an important case where acute tuberculosis of the uterus set in in a patient *æt.* 34, immediately after delivery of an eight months' *fœtus*,* death occurring at the end of nineteen days. H. Cooper† also details an interesting case in which rupture of the uterus occurred in the third month of pregnancy, due to considerable tuberculosis of the uterus. Mr. Tomlinson‡ relates a case of tuberculosis of the uterus of three years' duration, the patient *æt.* 55, and the uterus considerably enlarged.

TREATMENT.

Tubercle of the uterus would be treated, in cases where it is detected, on general principles. Careful and good feeding should form an important part of the treatment. Young women recently delivered, and of a phthisical tendency, should be carefully looked after, and great care taken to restore any lost power by suitable diet and regimen. Of the local treatment we can scarcely speak, experience being wanting, but the injection of weak solutions of iodine or bromine into the uterine cavity would probably constitute the best application. It would be requisite to have the os well dilated prior to such a procedure.

* *Allg. Wien. Zeit.*, 1860, No. 21.

† *Un. Méd.*, 1859, No. 54.

‡ "Obst. Trans.," vol. v.

DISTENSION OF THE UTERUS WITH FLUID (HYDROMETRA AND HÆMATOMETRA).

Apart from pregnancy, an essential part of which is the presence of a considerable quantity of fluid—the liquor amnii—in the uterus, we have cases in which the organ is found to contain fluids in considerable amount. The old terms *hydrometra* and *hæmatometra* implied presence respectively of watery fluid and blood in the uterine cavity.

Accumulations of fluids in the uterus not unfrequently occur in association with closure of the outlet, narrowing and stricture of the cervix, agglutination of the os uteri, flexion of the uterus, tumor in the cervix or lower part of the uterus, the most common of these causes being chronic flexion of the uterus (see Flexions). The quantity of fluid so accumulated in the uterus may be considerable, but ordinarily it is not very great. The due appreciation of these cases is a matter of much practical importance. An offensive persistent leucorrhœa is not uncommonly one of the results of these accumulations of fluid in the uterus.

The most considerable instance of hæmatometra is that met with sometimes in young women soon after the arrival of puberty, and due to retention of menstrual fluid in the uterus, the hymen being imperforate, or the os uteri itself congenitally occluded. Here the uterus may attain such a size as to reach to the umbilicus; the Fallopian tubes are not seldom also distended, and one occasional result is passage of some of the blood into the peritoneal cavity; a more rare event is rupture of the uterus itself into the peritoneum or into the bladder or rectum. Bernutz and Goupil* have devoted much attention to the study of the accidents arising out of these and other effects of menstrual retention.

It is remarkable that the uterus tolerates the presence of a fluid in its interior very differently in different persons. More explainable is the fact that, when the distension is not considerable, it excites more pain and irritation than when the organ is very greatly distended: a small quantity of blood may in cases of dysmenorrhœa give rise to great pain, the uterus acting vigorously to expel it. When, however, the distension is very great, it is usually accompanied by such a degree of thinning of the walls of the uterus, that the organ has little power of contraction left.

* "Clinique Méd. sur les Maladies des Femmes," English translation by Dr. Meadows. (New Syd. Soc.)

As an instance of distension of the uterus from menstrual retention, the following interesting case, recorded by Prall, of Hamburg, may here be quoted: The patient, æt. 43, previously regular, ceased to be so, and simultaneously symptoms of pregnancy set in. At the end of three months the uterus was enlarged, the os occluded, and the uterus contained a quantity of bloody fluid. It was imagined that the case was one of pregnancy with retroversion of the uterus; attempts were made to reduce this, but the force used had the effect at once of relieving the patient and showing the nature of the condition. The pressure employed forced the blood through the occluded os uteri.*

Amputation of the cervix uteri has been followed by hæmatometra. Considerable distension of the uterus with serous fluid is met with chiefly in women advanced in years. An instance of this kind was recorded by Dr. A. T. Thomson, in which the uterus contained eight quarts of a dark-colored brown fluid.†

TREATMENT.

The great object is to evacuate the contents of the uterus. This is not always easily done. When the lips of the os uteri are agglutinated, a careful examination is required to find out the precise situation at which to make a puncture. In such instances the cervical cavity is more or less obliterated, so that the uterine cavity is soon reached. When there is stricture higher up in the cervical cavity, dilatation by means of tents, aided by slight incisions, may be advantageously had recourse to. When the case is one of retroflexion, the restoration of the organ to its normal shape, by pressure on the fundus from below, or by use of the sound, usually suffices to allow the fluid to escape. When the case is one of ante flexion, a suitable mechanical treatment must be adopted (see Flexions).

After evacuation of the fluid, pressure and administration of ergot should be employed to aid the uterus in contracting.

Further remarks on the management of cases of occlusion of the os or cervix uteri will be found in the chapter on Dysmenorrhœa.

* Schmidt's "Jahrb.," vol cxvi., p. 65.

† "Med.-Chir. Trans."

DISTENSION OF THE UTERUS WITH GAS.

Well-authenticated cases of this affection are not many in number, but there can be no question that gaseous accumulations do occasionally take place in the interior of the uterus. The most common condition under which such accumulation has been noticed is the presence within the uterus of a dead foetus, or portions of the membranes which have been abnormally retained in the uterus after labors or miscarriages. The gas formed in the uterus under these circumstances is the result of the decomposition of the retained matters; it is foetid; and the uterus at the same time may contain purulent detritus. Further, it appears necessary that, to produce this gaseous distension of the uterus, the orifice of the organ should, having been recently open, have become closed. It seems on the whole probable that, first, air must have obtained admission into the uterus; that, secondly, the os must have become plugged up or closed; and that decomposition must have then occurred, and thus given rise to the gaseous distension now alluded to. That air does frequently pass into the uterus immediately after the expulsion of the foetus is a fact. It is evident, further, that, irrespective of labor or miscarriage, coagula undergoing decomposition in the uterus may generate gas, which may be retained and accumulate in the uterus, though the number of cases coming under this head are very few compared with those previously described. It has been supposed by some that the lining membrane of the uterus may secrete gas, but there is no proof of this. In many of the cases recorded as cases of gaseous accumulation in the uterus, the only proof of such accumulation has been the passage of flatus from the vagina, which has been erroneously supposed to come from the uterus. In an interesting communication to the Obstetrical Society of London, Dr. Harley * related the particulars of a case where flatus was occasionally expelled from the vagina. He ascertained by experiment that the gas so expelled had been the moment before drawn into the vagina, as he believed, by a spasmodic alternate contraction and relaxation of the recti abdominis muscles. Dr. Gooch mentions a case in which the patient only expelled flatus while not pregnant, the expulsion ceasing when she became impregnated, and he cited this to prove that the flatus must have come from

* "Obst. Trans.," vol. iv.

the uterus. This fact, however, affords no absolute proof of the truth of the explanation for which Dr. Gooch contends. It was more probably a case, such as that observed by Dr. Harley, of alternate admission and expulsion of air from the vagina.*

TREATMENT.

The obvious cure for this condition would be the evacuation of the gas by means of a long gum-elastic or other rigid tube, which would have to be introduced carefully through the cervix uteri. A tight bandage and cold affusions externally would be useful subsequently.

CHAPTER XLV.

DISEASES OF THE FALLOPIAN TUBES.

Tumors of the Fallopian Tubes, Fibroid, Tuberculous—Cyst Formations—Distension of the Tube with Fluid—Distension of the Tube with Blood—Puriform Accumulations in the Tubes—Fallopian Pregnancy—TREATMENT.

The diseases of the Fallopian tubes do not very frequently present themselves before us during life, although various alterations are often observed after death in reference to the shape, position, permeability, etc., of these ducts. The following comprise the more important of these abnormal conditions:

TUMORS OF THE FALLOPIAN TUBES.

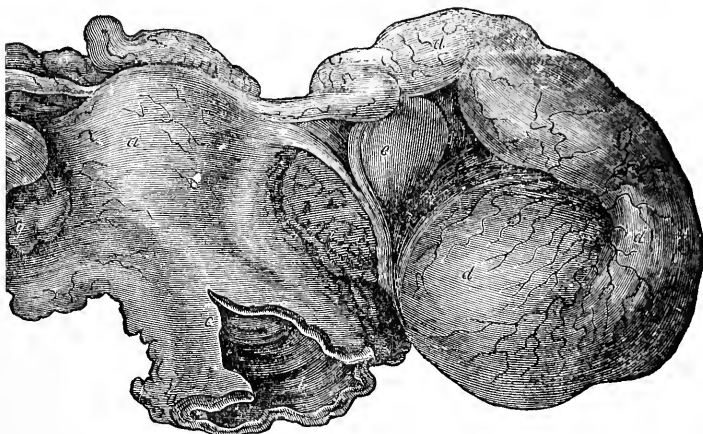
Fibroid growths may be found in such a position as to block up the passage, and occlusion of the tube sometimes thus results. *Tubercle* of the tubes has been met with, so also *cancer*. *Cyst formations* are more doubtful: they might readily be confounded with distension of the tubes themselves.

* See also a paper on this subject by Dr. Rasch, "Obst. Trans.," vol. xii., p. 281.

DISTENSION OF THE TUBE WITH FLUID (FALLOPIAN DROPSY.)

Tumors constituted by distension of one or both tubes with fluid are not so very uncommon. They are met with chiefly in old people, and are accompanied with closure of one or both extremities of the tube. The quantity of fluid may be so great as to distend the tube to the size of the foetal head or even larger (see Fig. 200 from Hooper). The fluid itself is usually of a watery character mingled with flaky substances of varying consistence. It is a curious circumstance that both tubes have been found simultaneously

FIG. 200.*



and about equally affected. One point of interest in connection with the subject is the physical resemblance between such tumors and cystic tumors of the ovary.

BLOOD ACCUMULATIONS IN THE FALLOPIAN TUBES.

The Fallopian tubes are not very unfrequently distended with blood to a slight extent in women during menstrual life. In some such cases the blood so accumulated finds its way into the peritoneal cavity (see Peri-uterine Hæmatocele). The blood may have three sources, viz., the uterus itself, the lining of the tube, or the Graafian follicle. It

* Fig. 200 (after Hooper), Fallopian dropsy.

may be produced by imperforate hymen, or by imperforate os uteri, and may occur in all cases when the outlet of the uterus below is occluded in any way. Thus it may be associated with menstrual retention; the blood secreted in the uterus, or in the tube itself, or possibly blood arising from the ovary, distending the tube in common with the uterus. In a case of menstrual retention with distension of the uterus, a tumor in the pelvis by the side of the uterus, and having the shape of the enlarged Fallopian tube, would suggest distension of the tube with blood. But the Fallopian tube may be distended with blood in cases where there is no distension of the uterus of a like character. A fibroid tumor situated at the junction of the tube and the uterus, and blocking up the canal, was the cause of the distension in a case related by Favel, and quoted by Bernutz and Goupil.* Occlusion of the tube at this situation from other causes may doubtless produce the same result. Dr. Farre states that he has found accumulations of blood in tubes closed at both ends, and in cases where death has occurred during a menstrual period; conclusively showing, according to his opinion, that the menstrual fluid is supplied in part by the wall of the Fallopian tube.†

PURIFORM ACCUMULATIONS IN THE FALLOPIAN TUBES.

These are the result of inflammatory action in the tubes or the uterus; the period of childbed is the one during which such formations are most liable to occur, but they may follow inflammation of the uterus, or result from operations on the generative organs; they may occur idiopathically, and in connection with chronic inflammation of the interior of the uterus; they may also result from stricture of the os uteri, whereby escape of fluid formed in the uterus is prevented. In the puerperal class of cases, pus may collect in and distend the Fallopian tubes, and may finally regurgitate into the peritoneal cavity. This is one of the modes of origin of puerperal peritonitis.‡

PAPILLOMA OF THE FALLOPIAN TUBE.

An interesting case is related by Mr. Alban Doran § in "Pathological Transactions," of the following kind:

* *Op. cit.*, tom. i., p. 168.

† *Op. cit.*, p. 618.

‡ See an interesting paper on this subject by Dr. Barnes, "Obst. Trans.," vol. iii., p. 419.

§ "Path. Trans.," vol. xxxi.

The patient, single, æt. 50, had suffered from menorrhagia after amenorrhœa, next symptoms of inflammation of right ovary. Then followed pleural effusion requiring tapping; after that ascites. She was tapped four times for the ascites. After the last tapping a hard nodular mass was found by Mr. Spencer Wells behind the uterus. An operation was performed, and, after removal of seventeen pints of fluid, an orange-sized tumor, consisting of the greater part of the right Fallopian tube, was removed, together with the adjacent adherent ovary. Recovery occurred. The tumor consisted of an elongated oval tumor three and a half by two inches, and was found to be the Fallopian tube dilated and filled with cauliflower excrescences, covered with a mucoid secretion, which issued from the fimbriated extremity where there was a bristle-sized aperture. The excrescences grew from all parts of the dilated tube; they were covered with columnar epithelium. Mr. Doran considers the specimen as an unusually large example of a growth recognized before by Rokitansky and Hennig, and he believes they are produced by chronic inflammation. The secretion from the tube irritated the peritoneum, and caused ascites.

FALLOPIAN PREGNANCY.

This is to be considered a disease, and generally a fatal one. But the subject is one which falls out of our province. Rupture of the tube and fatal abdominal hæmorrhage are the usual results.

TREATMENT OF DISEASES OF THE FALLOPIAN TUBES.

In some cases serous collections within the Fallopian tubes have been evacuated by means of a fine trochar and canula through the vagina.

The cases are few, however, in which surgical procedures are likely to be adopted, in consequence of the comparative rarity of disease in this locality, and also in consequence of the difficulty of their diagnosis. The case above related in which Mr. Spencer Wells excised a dilated tube is a very interesting and exceptional one.

A curious case is recorded by Dr. Baumgärtner, of Baden Baden.* A patient who had had ovariectomy performed, and

* "Berlin, Kl. Woch.," 1879.

subsequently gastrotomy, in order to relieve pain produced by adhesion of pedicle to bladder, became, later on, affected by a quite unendurable pain in the ovarian region. Gastrotomy was a third time performed, and the right Fallopian tube, being found distended and on the point of bursting, was removed, together with the ovary. Cure.

In cases where the tubes are distended with pus, as in a case of puerperal metritis, great care would be required to maintain rest, lest the contents of the tube be poured out into the abdominal cavity.

In cases of *Fallopian pregnancy*, if it were possible to make an exact diagnosis of these cases of rupture and hæmorrhage during life, it would undoubtedly be better to open the abdomen and endeavor to secure the bleeding vessels, than to allow the patient to die from hæmorrhage. No operation of the kind has ever been attempted, but the subject has formed matter of discussion on more than one occasion at meetings of the Obstetrical Society of London. The chief difficulty lies in the diagnosis, for, until the patient is dead, the real nature of the case is not generally detected; such at least, has been the experience of most practitioners. Increased accuracy of diagnosis of the diseases of the female generative organs may, perhaps, result in the more frequent recognition of this formidable accident sufficiently early for measures to be devised and carried out by which life may be saved.

[Extra-uterine pregnancy is interstitial, Fallopian, or abdominal, according to the place at which the ovum is arrested in its transit from the ovary. It is always attended with danger to life. When true Fallopian, it usually terminates in rupture and death by hæmorrhage from the sixth to the twelfth week, often even before we are aware of its existence. If, at the end of the third month, we should diagnose it as interstitial we can afford to wait and watch and be guided by circumstances. If we are able to diagnose it as Fallopian or abdominal the proper course of treatment then becomes a question. In the early stages the electric current has been used to kill the fœtus—also aspiration for the same purpose. I now have under my care a case of abdominal pregnancy in which the electric shock was given by our well-known electrician Dr. A. D. Rockwell. The fœtus was probably killed the first time the current was used, but it was thought best to repeat it three or four

times in order to make sure of it. The sac diminished in size very rapidly, and is now being gradually absorbed. For a clear account of the method of using the current in these cases I would refer the reader to the third edition of Dr. Rockwell's book on Medical Electricity.

Dr. Thomas has had a larger experience in the treatment of extra-uterine pregnancy than any amongst us. He has seen in consultation five deaths from rupture, two from septicæmia (one after aspiration and the other after incision), and has had one recovery after operation through vaginal *cul de sac* with galvanic cautery, and three recoveries by abdominal section. Lawson Tait has operated six times by abdominal section for extra-uterine pregnancy, and five of the cases recovered. The sixth failed only because undertaken too late. His method of operating is by stitching the incised walls of the sac to the edges of the abdominal incision, after having removed the fœtus, and then introducing a drainage tube. This plan he adopted after the method introduced by my father in cholecystotomy. The success of Lawson Tait augurs well for the future treatment of advanced stages of extra-uterine pregnancy.]

CHAPTER XLVI.

DISEASES OF THE OVARIES—OVARITIS—DISPLACEMENT OF THE OVARY—NEUROSES—BATTEY'S OPERATION.

ACUTE OVARITIS AND ABSCESS OF THE OVARY.

CHRONIC OVARITIS.—Obstructed Ovulation, its Effects and Causes—Changes in the Graafian Follicles—Congestion of the Ovary—Effects of long-standing Chronic Ovaritis—Etiology, Sexual Excesses—Gonorrhœal Disease—Symptoms and Signs of Chronic Ovaritis—Pain, Tenderness to Touch—Diagnostic Signs.

Treatment of Acute Ovaritis—Treatment of Chronic Ovaritis—General Measures—Battey's Operation, Cases for which it is suited.

DISPLACEMENT OF THE OVARY.—Symptoms, Treatment.

NEUROSES OF THE OVARY.—Mental Disturbances—Neuralgia—Nymphomania—Hysteria and Hystero-Epilepsy.

BATTEY'S OPERATION.—Historical and Statistical Criticism.

ACUTE OVARITIS AND ABSCESS OF THE OVARY.

This is a condition rarely met with in practice. Sudden suppression of the menses, from chilled or wetted feet, has

appeared to lead to it, but such an occurrence is extremely rare. In connection with the puerperal state it is more common; we then generally find it associated with a pyæmic condition, with inflammation of the uterus, and marked changes in the large uterine veins. Pelvic abscess, which may follow on parturition, or on any operative procedure on the generative organs, generally begins in the neighborhood of the ovary, and may involve this organ. Acute inflammation and abscess of a previously healthy ovary is a condition hardly known. But when the ovary is affected with cystic disease the cysts may inflame and suppurate.

CHRONIC OVARITIS.

The process of ovulation involves rupture of the surface of the Graafian follicle, passage of its contents into the Fallopian tube, and subsequent closure of the opening (see p. 50, vol. i.). This physiological process is liable to be disturbed. Thus the rupture may be impeded by previous inflammatory thickening of the surface of the ovary. This thickening may be produced by previous pelvic inflammatory action, which latter may be set up in many ways. Pelvi-peritonitis (Bernutz and Goupil) is a condition which may be produced by escape of blood from the ovary or secretions from the Fallopian tubes into the peritoneal cavity near the ovary, the ovipont being disturbed, and probably in other ways also. False membranes thus originating may obstruct ovulation or may disturb the normal ovipont.

When ovulation is obstructed, as a result of this other changes are likely to occur in the ovary itself—swelling, turgescence, thickening, degeneration, and other changes in the stroma of the ovary itself; and in process of time the result may be that the ovary is contracted, diseased in various ways, and the healthy development, maturation, and dehiscence of Graafian follicles materially interfered with. Doubtless also in some cases morbid actions originating in the stroma of the ovary give rise to alterations in the tissues of the organ. The Graafian follicles may become diseased before they reach the surface, or disease may attack them during their retrogressive changes. In some cases the ovarian stroma becomes broken up, atrophied, the ovary as a whole losing its proper shape and definite outline, and becoming fused as it were into the

adjacent tissues by exudation formed over the ovary, the result of intra-ovarian or extra-ovarian morbid action.

Chronic ovaritis is a term which is employed to designate the various morbid processes enumerated in the foregoing paragraphs. Negrier* described the morbid changes in the follicles as "vesiculitis."

Thus, obstructed ovulation may set up disease either in the Graafian follicles or in the intermediate ovarian stroma. The term "chronic ovaritis," as now employed, covers most of the morbid processes liable to occur in the ovary. It seems probable that the more common cystic diseases of the ovary have their origin in that form of ovaritis which is associated with obstructed ovulation. Facts which have come under my own notice lead me to suspect that chills during the process of menstruation are not unfrequently the cause of serious subsequent disease, the primary effect being folliculitis in that one particular Graafian follicle which is most enlarged and developed, and which is at or near the period of dehiscence at the time the chill is experienced.

Congestion of the ovary is a condition which precedes chronic ovaritis. The congestion may affect the whole organ, increasing its size and weight. Clinically it is a condition not frequently met with unless in cases where the ovary has become displaced. Cases are recorded, however, in which congestion, softening, and a semi-pulpy condition of the ovary have been met with after death.

A very important element in cases of chronic ovaritis is the condition of the nutritional functions. Thus, if the patient be tuberculous, the character of the ovaritis will probably be much affected thereby. Feebleness and weakness from any cause also will be likely to intensify it, and even to initiate it. A low form of chronic inflammatory action is liable to be set up under such circumstances, and normal ovulation does not occur, either because the false membranes or adhesions prevent the access of the fimbriæ of the Fallopian tubes to the ovary, or because the fimbriæ are diseased or fixed, or because the ovary itself has either superficially or deeply undergone chronic inflammatory changes.

Other facts in connection with the history of chronic

* "Recueil des Faits pour servir à l'Histoire des Ovaires et des Affections Hystériques de la Femme," Angers, 1858.

ovaritis have now to be stated. When the malady has existed for some time, the pain and distress thereby directly or indirectly produced is so great that the patient falls into a state of health of a very deplorable character. The misery involved in the continuance of the ovarian function under such circumstances led Dr. Battey of Georgia, U. S. of America, to adopt the plan of extirpating the ovaries in such cases. Cases of this advanced character are not very common. And it is very important to distinguish between severe cases of chronic ovaritis and chronic severe dysmenorrhœa due to some morbid condition of the uterus. The distinction is by no means easy in all cases.

Etiology.—Sexual excesses not unfrequently occasion chronic ovaritis. Sterility occurs as a further result of such excesses, the effect of which is probably to produce serious disturbances in the healthy maturation of Graafian follicles, to lead to their premature bursting, and to give rise to occasional failures of the ovipont—*i.e.*, to escape of the contents of the follicles into the peritoneal cavity, and consequent irritation at that spot. Chills during menstruation, whether producing actual suppression of the catamenia or falling short of this, are undoubted causes of ovaritis. Exalted functional activity of the ovaries, which may be induced by defective moral training or early addiction to bad habits, may lead to serious chronic ovaritis.

Chronic congestion of the uterus is frequently accompanied by chronic ovaritis.

Gonorrhœal disease is undoubtedly a cause in some cases of ovarian disease. Ovaritis of gonorrhœal origin is liable to produce chronic inflammatory action in the ovary itself, but more particularly in the peritoneum near the ovary. Chronic pelvi-peritonitis with chronic ovaritis of a very serious and troublesome character may thus originate.

Symptoms and Signs.—A common symptom is *pain* in the ovarian region.

The presence of pain in the ovarian region does not, however, prove that the ovaries are diseased, nor does it prove that they are even the seat of inflammation or irritation. Pain in these regions is more often due to disease of the uterus than to disease of the ovaries. Pain during menstruation also is much more commonly due to disorder of the uterus. In the chapters on Uterine Flexions and on Dysmenorrhœa this question has been fully discussed.

There is no doubt that cases present themselves, though

probably comparatively few in number, in which the pain is really connected with the ovaries, and arises very possibly from what may be termed *difficult ovulation*.

To this class of cases possibly belong those which Dr. Priestley has described, in which, intermediate between the regular menstrual periods, there is felt every month a peculiar pain like that experienced at the monthly times, but without discharge. These are probably cases of difficult ovipont.

Tenderness of the Ovary to the Touch.—A vaginal or rectal examination is the best means for detecting actual ovarian tenderness. When the ovary is actually sensitive to the touch and persistently so, when it is manifestly swollen, the evidences are decided as to the presence of ovaritis. But tenderness and swelling are not always present. In some cases we find the ovary markedly hard, irregular to the touch and smaller than usual, or it may be indistinguishable on careful double examination, owing to chronic inflammatory action having fused it to adjacent tissues.

Tenderness in the lateral hypogastric or supra-inguinal region is, according to my experience, not by any means a sign of ovaritis. Pressure in this spot may give pain, but it may be found that on an internal examination the ovary is not tender at all to the touch. Supra-inguinal tenderness and swelling are really most commonly due to ante-flexion of the uterus. This is a fact which I have verified by repeated observation, and it is a most important one, for it has been held heretofore to indicate the presence of ovaritis. When ovaritis or ovarian congestion are really present, there is no doubt supra-inguinal tenderness liable to be observed: this is not disputed. Further, when pelvi-peritonitis is present, tenderness in the supra-inguinal region is liable to be noticed. The same remark applies to *swelling* in the supra-inguinal region. A tympanitic slight swelling is very liable to be observed in this region, particularly in cases of ante-flexion, also in cases of pelvi-peritonitis. This swelling is not necessarily indicative of ovaritis. I have supposed it to be due to irritation of the peritoneum, produced by traction or stretching of the round ligament, consequent on the altered position of the uterus.

In cases of *acute* inflammation of the ovary, entire rest is essential. Leeches should be used in cases where the attack depends on a sudden chill, followed by warm and

moist applications. In cases where gonorrhœal infection is believed to be the source of the mischief, leeches might still be useful at first, specific remedies being given later. When a puerperal cause is present depletion is not indicated; the case is one of, or tending toward, septicæmia, and the indication is to support the strength of the patient, rather than to remove blood. Rest, warmth by means of hot turpentine stupes, and a stimulating and nourishing diet, should be had recourse to.

Cases of *chronic ovaritis* must be treated with a view to the special requirements of the patient. In some cases immoderate sexual excitement has to be corrected, and a moral treatment enforced. The tendency to congestion of the ovaries may be diminished also under these circumstances by employment of cold affusions over the hips and lower part of the abdomen, by remedies and a regimen calculated to call the other functions of the body into active exercise. If there be no tendency to uterine displacement or flexion, the gymnasium, or equestrian exercise, or some active mental employment, necessitating also a tolerable amount of walking, may be recommended. Exercise is, under these circumstances, almost always attended with some degree of pain, and it is frequently necessary to keep the patient at rest for a time, before commencing exercise to any great extent.

Functional rest is more or less required in all cases. At the menstrual periods the patient should be ordered to remain on the couch or in bed, the apartment kept cool, and stimulating nourishment avoided.

Counter-irritation and sedatives constitute on the whole the best treatment for the ordinary run of cases. A tartar-emetic ointment, or a liniment containing croton oil, may be rubbed in night and morning over the ovarian regions, and opiates sufficiently strong to relieve pain ordered. One pill containing half a grain of opium, a third of a grain of extract of Indian hemp, and one grain of camphor may be given night and morning. Care should be taken that the bowels are relieved each day.

"Battey's operation" is a resource available in cases of advanced or incurable chronic ovaritis. It has been performed for other reasons, but with those we are not concerned in this place. It would appear that it is indicated more particularly in cases where there is chronic ovaritis due to obstructed ovulation, from whatever cause, where other treatment has proved ineffectual. It will probably

be employed in some rare cases where the continuance of the function of the ovaries is unbearable in consequence of incurable uterine disease. At present the ovaries appear to be credited with more than is their due in the origination (directly, at least), in that state of things for which Batty's operation has been put in practice, but these cases will no doubt be more carefully discriminated in the future.

DISPLACEMENT OF THE OVARY.

The ovary is sometimes found to have left its ordinary position and fallen downward, generally in the middle line, in the Douglas pouch. It there constitutes a tumor plainly distinguishable by vaginal examination, having the shape and size of the ovary, but not seldom much increased in size. It is usually very painful and sensitive to the touch. The causes of this prolapsus or descent of the ovary are various, but the most common cause appears to be retroflexion of the uterus. The fundus uteri may drag on the ovary, or the violent straining in defæcation which retroflexion sometimes occasions may be the event determining the displacement. Having become prolapsed, the ovary may either remain in a mobile condition, or it may become adherent and fixed in its altered position by inflammatory exudation.

The symptoms produced by prolapsus of the ovary are, as a rule, very marked, and sometimes very severe. They consist in pain attendant on defæcation often amounting to torture, pain on walking, and general discomforts of various kinds. The symptoms, in fact, resemble very much those due to severe retroflexion of the uterus. And when the two conditions—ovarian prolapse and retroflexion—are associated, the symptoms may be doubly intense. Various nervous reflex symptoms—*e.g.*, severe hysterical phenomena—may be observed.

The treatment of prolapse of the ovary is sometimes a simple matter. Thus, if it be due to retroflexion of the uterus, and the ovary be free to move, a Hodge pessary may be found to be the cure for both displacements. But if the ovary be adherent, and, as it often is under such circumstances, inflamed, efficacious treatment is very difficult. The primary object should be to replace the prolapsed organ, and remove it from this very inconvenient position, which may be best done by some modification of the

Hodge-shaped pessary carefully padded in the part liable to touch the ovary, or by a simple india-rubber ring pessary. Complete rest would be required while the inflamed and displaced ovary is thus being gradually pushed upward out of the Douglas pouch, and the use of the pessary would be necessary for a considerable time to prevent liability to return of the displacement.

In certain severe cases Battey's operation has been performed, and the ovaries extirpated for the cure of this displacement. Up to the year 1881 five such cases had been recorded.*

NEUROSES OF THE OVARY.

Cases not very uncommonly present themselves in practice in which a neurosis is present, traceable to some excitation or irritation in the generative organs. The ovary and the uterus are the two principal organs, and the question arises whether the affection has its origin in the one or the other of these two principal locations.

The question has already been discussed at some length (see p. 124), and the share which the uterus has in the origination of these maladies has been defined. It remains to be stated what share the ovaries have in the origination of neuroses.

When the ovarian functions come to an end, or are in abeyance, uterine neuroses disappear or become much lessened in their intensity. But ovarian neuroses and uterine neuroses are nevertheless distinct the one from the other.

The ovaries appear to be the predominant organs in the female economy. One thing, at all events, is certain, that fecundation is inseparably connected with their existence and healthy activity. It does not appear, however, that menstruation is always arrested when the ovaries are removed, and evidence seems to show that the exercise of sexual relations is not materially altered when double ovariectomy has been performed.

As regards purely *mental* disturbances the evidence as to the influence of the ovaries is directly contradictory. For mania is stated to have been cured in some cases after the performance of ovariectomy, and to have been unrelieved in other cases when the operation was performed.

* See Battey's Report, Int. Med. Congress, 1881.

Chronic neuralgia of the ovaries is, perhaps, the most definite of the neurotic affections traceable directly to the ovary, but cases of this kind are, in my opinion, much more rare than is generally supposed; in many supposed cases of this kind the pain located near the ovary is due to some morbid condition of the uterus (see p. 329). Still, some cases probably remain which may truly be called neuralgia of the ovary (coupled with chronic ovaritis, etc.).

Nymphomania has been supposed to have its origin in some morbid condition of the ovaries. Possibly it is the case in some instances. In cases which have come under my notice, where undue sexual excitability was present, the condition with which I have found it associated in some marked instances has been acute anteflexion of the uterus; and that it depended on the uterine condition was proved by the cure of the one following the cure of the other.

Hysteria, Hysterical Attacks, Hystero-epilepsy.—The ovarian source of these affections is a doctrine which has of late years been credited to a large extent, chiefly owing to the writings of Negrier, Charcot, and others. It rests on a very frail foundation. The clinical evidence which I have been able to collect is directly in favor of the uterine origin of these affections (see p. 142). In so far as the ovary controls the uterus these affections may be said to be under the influence of the ovaries. It is conceivable that the ovaries may have a direct originating influence in some cases, but the clinical evidence in the cases observed by myself was not suggestive of this mode of origin. Cases have been observed in which removal of the ovaries has put an end to hystero-epilepsy, but this does not in any way prove that disease of the ovaries was in those cases the exciting cause of the affection.

BATTEY'S OPERATION (OÖPHORECTOMY).

The operation now by universal consent designated as "Battey's operation" was first suggested by Dr. James Blundell. It was first actually performed by Hègar, July, 1872. Dr. Battey of Rome, Georgia, U. S. of America, performed it a few days later, in August, 1872, and without knowing of its previous performance by Hègar. Dr. Battey immediately published an account of his first case, and of the principles which induced him to perform the operation, and very shortly after proceeded to perform other

similar operations; and although not actually the first operator, he was the first to enunciate and popularize the principle of the operation. In actual priority, however, of performance, Percival Pott was the first to perform double ovariectomy of normal ovaries. This was in a young woman of 24, in whom the ovaries formed tumors in the groins, and interfered with her getting her livelihood.

Battey's operation is defined by the author to be "an operation for the removal of the normal human ovaries, with a view to establish at once 'the change of life,' for the effectual remedy of certain otherwise incurable maladies."*

His first operation was performed on August 17, 1872. The patient, single, æt. 30, had been seven years under treatment for amenorrhœa, accompanied by very severe menstrual molimina and suffering, which had been experienced since the age of 16. She had never had more than two proper catamenial periods. She suffered from frequent hæmorrhage from the stomach and rectum, attacks of hæmatocele, abscesses, extreme debility, and a generally miserable state of existence. The uterus had been dilated and treated with some slight benefit, but no real improvement. The patient gladly accepted the proposal to remove the ovaries. This operation was successfully performed after abdominal section. The pedicles were ligatured and dropped. The cure was complete, and a principle thus established, quite novel in medical treatment, and which is no doubt destined to prove a most valuable addition to the resources of the medical art.

In Battey's first operation the ovaries were extracted by median abdominal section. Battey's next operations were performed differently, the vaginal operation being adopted. The "direct lateral" method of abdominal operation was adopted in some cases by Hègar and Langenbeck. Of late, however, the vaginal method has fallen into disrepute, and the abdominal method is now generally considered preferable. Again, in several cases the plan of removing but one ovary was adopted, even in some of Battey's own cases, thus, as Dr. Marion Sims truly remarks, "departing from the rule laid down for his guidance at the start." The result of these incomplete operations has not been favorable.

Among operators who have contributed, up to 1881, to

* "Normal Ovariectomy."—*Atlanta Med. and Surg. Journ.*, Sept., 1872.

the experience of the new procedure must be mentioned, Hègar (42 operations), Battey (16), Marion Sims, Savage (25 cases), Lawson Tait (30 cases), Engelmann, Schroeder, Pallen, Noeggerath, Alex. A. Simpson, Goodell, Heywood Smith, and others. Since 1872 the operation has been performed many times. At the recent International Medical Congress held in London, Dr. Battey, who was present, brought forward statistics of the operation up to the date of the Congress (1881), including operations by himself and others, as follows:

Complete operations (both ovaries removed).....	193
Incomplete cases (one ovary removed, or both imperfectly removed).....	25
	<hr/> 218
Of the total cases, 18 per cent died.....	40
“ 82 per cent recovered.....	178
Of the ultimate results reported—	
Complete operations, cured.....	88 or 72 per cent.
“ benefited.....	22 “ 19 “
“ not benefited....	11 “ 9 “
Incomplete operations, cured.....	6 “ 26 “
“ benefited.....	10 “ 44 “
“ not benefited... 5 “	22 “
“ not stated..... 2 “	8 “

In the tabulated list given by Dr. Battey there is a column stating the “indications for the operation.” I have summarized the cases as accurately as circumstances admit:

Myoma, or uterine tumor.....	38 cases
Ovaralgia, or ovarian dysmenorrhœa.....	39
Dysmenorrhœa, or pernicious menstruation..	30
Chronic ovaritis.....	16
Hystero-epilepsy, or reflex neuroses.....	32
Prolapsed or dislocated ovary.....	5
	85 “

In several cases the “indications” are omitted; the others, tabulated, are miscellaneous in character—Mania, incurable uterine disease, chronic pelvic inflammation, menorrhagia, etc. The above includes over three fourths of the whole cases, and represents the indications for the operation in the majority of the cases hitherto actually dealt with.

A careful examination of the actual records of cases of Battey’s operation shows that a short tabulated account, such as that of which a summary is given above, conveys

an extremely imperfect idea of the real nature of the cases; and it would seem that it is often an accident as to which of the symptoms present is selected to represent the case in the tables. Take, for instance, Dr. Marion Sims's "incomplete" cases—we find six cases recorded as cases of "ovaralgia," one of these coupled with "enteralgia," another with "dysmenorrhœa." Now, the full records of these cases published by Dr. Marion Sims state that in the first there was retroflexion of the uterus, in the second retroversion, in the third stenosis of the cervix uteri, in the fourth antelexion, in the fifth retroflexion, in the sixth retroflexion. Yet in the tabulated list the indications are stated as being "ovaralgia." Plainly, therefore, these particular cases are open to the criticism that the uterine distortion was not improbably the cause of the suffering from which relief was sought by Battey's operation.

The same objection applies with more or less completeness to other cases in which ovaralgia, dysmenorrhœa, chronic ovaritis, etc., formed the stated indications for the operation. These terms are not sufficiently definite to meet the present scientific requirements, nor sufficient to guide future action in regard to this operation. It is certain that in some, at least, of the cases which have been submitted to the operation the patient was suffering from disease of the uterus, which might have been successfully treated and without undergoing the mutilation implied in its performance. From what I have seen in practice, and from what I know of the natural history of the disease of the uterus, it is perfectly certain to my mind that many cases of severe antelexion of the uterus or marked retroflexion of this organ are included in the published list above alluded to, but they figure there under other heads and under different designations. It is a very curious fact that out of the 218 cases there are only four in which retroversion or retroflexion of the uterus is mentioned at all in the *tabulated* list, and there is no mention of antelexion whatever.

The difficulties and dangers of Battey's operation may here be mentioned.

The operation is simple, as Engelmann points out, when the pelvic viscera are normal, the broad ligaments lax, the ovaries free from adhesion and not degenerated. But these conditions are not usually present in the cases requiring the operation. When the ovaries are degenerated or adherent, owing to the deep position they occupy, it is not

easy to isolate them from adjacent tissues and to securely fix the necessary ligatures. And when the operation is done in cases of tumors of the uterus, such tumors are much in the way and may prevent easy access to the ovary on one or the other side.

Battey's operation, as defined by himself (and there seems no reason to amend that definition), is "for the effectual remedy of certain otherwise incurable maladies." The diseases to be dealt with by it are therefore such as have been subjected fruitlessly to other methods of treatment.

The objections to the operation are strong ones, and they are such that it is hardly likely the operation will in time to come be much abused, for by it the patient is, of course, effectually prevented becoming a mother, though it does not appear that, as was at first objected, the operation unfits the subject of it for marital duties.

The largest number of cases hitherto operated on have been cases in which menstruation was painful, or difficult, or both, and attended with other grave and troublesome symptoms, and in many cases in which it was conjectured that the ovaries were actually the seat of disease.

In reference to this class of cases, future decisions in regard to the performance of the operation will depend on the curability or not of the menstrual derangement or difficulty. It has been already pointed out that in all probability the organ most at fault in some of the cases reported was the uterus rather than the ovaries, and it is to be expected that in a large proportion of these "uterine" cases the operation will not prove to be necessary when more attention and time can be given to the cure of the uterine disorder. It is true that in some of these very cases the malady, by its long standing and chronicity, is virtually incurable. Such will be proper cases for Battey's operation.

There are two methods of performing Battey's operation—from the vagina or by the ordinary operation, such as for ovariectomy, through the abdominal wall. There appears every reason for the belief that the vaginal method, though it has been successfully performed, will not be extensively employed in the future (see Operation of Ovariectomy in a later chapter).

CHAPTER XLVII.

DISEASES OF THE OVARIES—(*continued*).

CYSTIC AND OTHER TUMORS OF THE OVARIES AND BROAD LIGAMENTS.—
PATHOLOGY.

CYSTIC AFFECTIONS OF THE OVARY AND BROAD LIGAMENTS.—Hydatid Cysts—Cysts of the Broad Ligaments (Wolffian Cysts)—OVARIAN CYSTS PROPER.—General Characters—Origin—Varieties of Arrangement: Simple, Secondary, Tertiary, Multiple, Composite—Cysto-sarcoma, Alveolar, Adenoid, or Glandular Tumor—Cysto-carcinoma, Dermoid—Shape and Consistence of Cysts—Their Lining and Contents—Dermoid Cysts: Nature and Structure—Compound and Composite Ovarian Tumors: Structure and Contents—Solid Tumors of the Ovary enumerated—Natural History of Ovarian Tumors and Ovarian Dropsy as Data for Prognosis and Treatment—Mode in which Life is destroyed—Complications with Pregnancy.

The *cystic affections of the ovaries and broad ligaments* are of great interest and importance. They are frequently most serious in their results, their diagnosis is often a matter of great difficulty, and it is only within a quite recent period that medical science has been able to grapple with them in any degree satisfactorily. For clinical reasons the cyst affections of the ovaries and of the broad ligaments will be considered side by side, but they are of course essentially different both in nature and origin.

We have to consider *seriatim*—

Hydatid cysts.

Cysts of the broad ligament, sometimes termed Wolffian cysts.

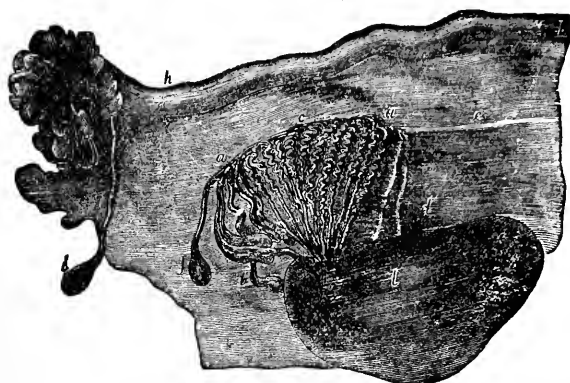
Proper ovarian cysts, of which there are several varieties, including the cysts met with in what is termed "ovarian dropsy," "dermoid cysts," etc.

Hydatid cysts are sometimes met with on the outer surface of the ovary, or attached to the peritoneum in the neighborhood. The size of such cysts does not ever probably much exceed that of a large orange. They have the ordinary character of hydatid cysts, such as are found in other localities. They—probably almost constantly—originate in the liver, escaping from an hydatid tumor of the liver containing them, into the peritoneal cavity.

Cysts of the Broad Ligament (Wolffian cysts).—The formation of large cysts on the surface of the broad ligament,

and quite unconnected with the ovary, is well substantiated. These cysts are usually single and quite simple. They originate probably in the little tubules or terminal cyst-like bodies (see *f b i* in Fig. 201, from Kobelt) found near the fimbriæ of the Fallopian tubes and close to the ovary. The structures in which they originate are the remains of the tubules of the Wolffian body. The cysts of the broad ligaments rarely attain a size exceeding that of an orange, their course is ordinarily very slow, and the inconvenience they occasion is consequently not great. Now and then, however, they attain a large size. Thus Mr. Spencer Wells^{*}

FIG. 201.†



mentions a case in which the cyst was twice the size of the adult head. It was removed from a patient æt. 20. Dr. Wynn Williams exhibited at the Obstetrical Society† a very large single cyst, partly removed during life from the abdomen, which was referred to me for examination. It was a single large simple cyst 24 inches in circumference, and the conclusion arrived at was, that it had originated in the broad ligament. The walls of the cyst were $\frac{3}{16}$ of an inch thick, it had undergone inflammatory changes within, and consequent thickening, and had become adherent superiorly to the diaphragm. The abdomen had been enlarged in

* "On Diseases of the Ovaries," vol. i., p. 239.

† Fig. 201 (from Kobelt) represents the parovarium with its terminal cysts.

‡ See "Obst. Trans.," vol. viii., for 1866.

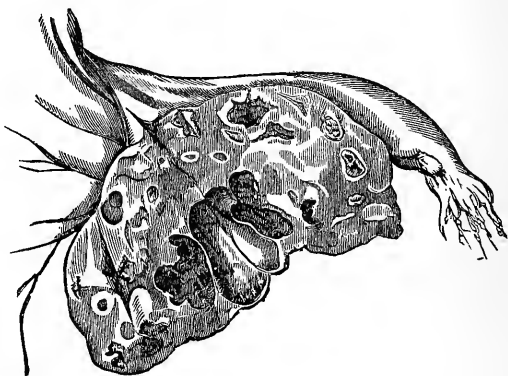
this latter case for several years. I have myself successfully removed by the operation for ovariectomy a cyst as large as this last, and it appeared to be of similar character. The patient had had children, and her age was over 50. The duration of the tumor was in this case over four years. In another case I removed along with a large true ovarian tumor two such cysts, one the size of a large walnut.

The *age* at which they occur with the greatest frequency is between 20 and 40.

OVARIAN CYSTS (PROPER).

Ovarian cysts occur of all sizes, from one of microscopic

FIG. 202.*



minuteness to one of sufficient size to distend the abdomen to the utmost.

One ovary alone may be diseased; sometimes both are affected.

They occur sometimes singly; in most cases, however, when the ovary takes on cystic disease, more than one, generally many, cystic growths are found associated.

They contain fluid, or a semi-fluid or jelly-like material, or together with this a growth more or less firm and solid. They may undergo, like other structures, inflammatory

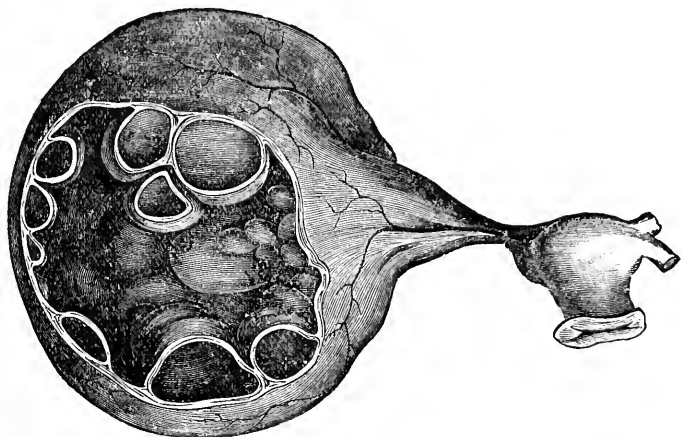
* Fig. 202. Section of an ovary, showing enlarged Graafian follicles with sero-sanguineous contents. (Half the actual size.)

changes, resulting in formation of pus, false membranes, etc.

In many cases ovarian cysts are evidently nothing more than enlarged and hypertrophied and dropsical Graafian follicles, such as represented in Fig. 202.

Rokitansky and some subsequent observers have even succeeded in finding ova in some of the cysts in question, thus affording a demonstrative proof of their nature. The follicle does not for some reason or other burst, or if bursting occurs, its lining takes on certain morbid changes sub-

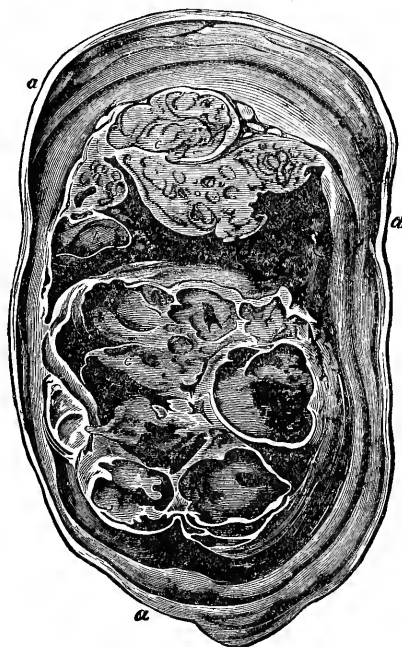
FIG. 203.



sequently, the result being continued growth of the cyst, and filling of its cavity with fluid. Simple ovarian cysts and multiple cysts originate in this way according as one or more follicles take on morbid action. We can imagine this hypertrophy affecting the Graafian follicles at any period of their growth, with proportionate differences in the results. The Graafian theory of the origin of ovarian cystic disease being admitted, it is easy to see how all sorts and varieties may present themselves in the relations of cysts. A cyst grows, and in its growth carries over it, or within it, portions of the ovarian stroma, in which lie the elements of future Graafian follicles. These undergo the pathological cystic transformation, and hence we get cysts developed one within the other almost *ad infinitum*.

The variations in the growth of the cysts occasion also great differences in the aspect and relations of the tumor at different periods. Thus, a "simple" cyst may preserve its integrity for many years, the remainder of the ovary not partaking, or partaking reluctantly, so to speak, in the cystic transformation; or the primary cysts may be rapidly

FIG. 204.



encroached upon, and filled up with secondary growths of cysts. And what may happen in reference to the first and second growths may take place also between the secondary and tertiary cysts.

The principal *varieties of arrangement* are as follows:

A. One large cyst (simple).

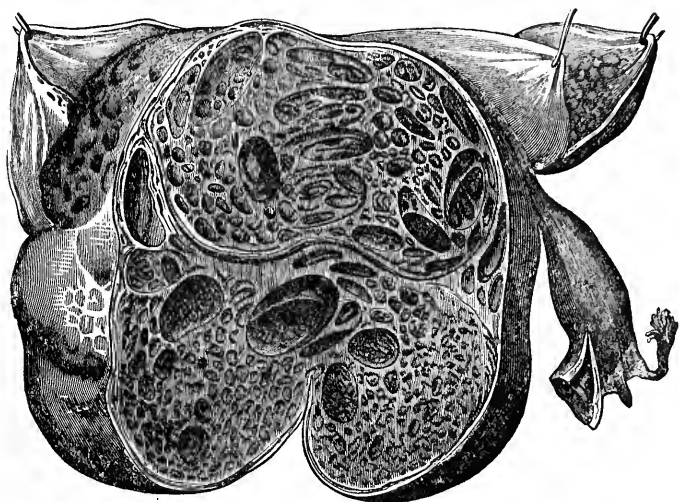
B. One large cyst in the interior of which are found several smaller ones ("secondary"), and within these again others still smaller ("tertiary"); these are also termed

"compound" cystic tumors, "proliferous" (see Figs. 203, 204, from drawings by Dr. A. Farre).

C. Three or four large cysts ("multiple," Farre), quite or nearly contemporary in growth, and which may contain secondary cysts.

D. A cystic tumor composed of one or more large cysts, and together with these a solid substance, itself containing cysts—"composite ovarian tumors," "cysto-sarcoma," or "alveolar adenoid tumor" (Spencer Wells); "glandular"

FIG. 205.*



(Wilson Fox). Fig. 205, from Cruveilhier, and designated by him and former pathologists "colloid cancer," represents an ovarian tumor of this kind.

E. Cancer may be present together with cystic structures ("cysto-carcinoma").

F. One or more cysts containing hair, fat, etc., ("dermoid").

In "ovarian dropsy" we have one or more large cysts containing fluid.

The *shape* of ovarian cysts is ordinarily rounded where

* Fig. 205, from Cruveilhier and Farre, is a good representation of the alveolar or glandular tumor; formerly termed colloid cancer.

they are single. Where also the tumor contains two or more large cysts, the outline of the whole tumor is rounded. When so large as to occupy the greater part of the abdomen, the shape of the cyst or cysts is determined necessarily by that of the abdominal walls.

The *consistence and thickness of the walls of the cysts* are various. The wall is sometimes very thin, especially in the case of single cysts, or where the tumor is mainly made up of one large cyst: the free surface of most cysts is thin. But the cyst walls have often very considerable thickness, and they are liable to be thickened by deposit from within, this deposit being the result of inflammation or coagulation of effused blood, or deposition of fatty matter in the shape of cholesterine, or from growths to be presently de-

FIG. 206.*



scribed. In the case of simple cysts, the walls are generally divisible into three layers. The outer is the peritoneal covering, which is thin and translucent. The middle coat is of varying thickness, according to the age of the cyst and other circumstances; it is generally a firm, fibrous layer, giving strength and consistence to the cyst. The middle coat contains the blood-vessels of the cyst, which are often very numerous, and may be as large as a small quill. Fatal hæmorrhage may occur in the operation of paracentesis, from wounding these vessels. The internal coat is a layer of cells, generally spheroidal, sometimes columnar (see Fig. 206); the epithelium may be a single layer, but is very often in several layers. The character of the

* Fig. 206 represents epithelial cells from the interior of an ordinary ovarian cyst: A from a very small cyst; * the same, after addition of acetic acid; B from the surface of a contained cyst.

internal lining varies in different places, and according as other changes—inflammatory, etc.—have affected it.

The *contents of ovarian cysts* are open to great variation. Some, containing hair, fat, teeth, etc., form a class by themselves, presently to be described (dermoid cysts). The contents of the more ordinary cysts are mostly fluid, but very frequently they have a consistence more nearly that of treacle, and we may have all gradations between a limpid fluid and a thick mucus-like mass. The color varies excessively. In the majority of cases, the large cysts contain a fluid simply serous in character, light-yellowish and transparent; where there are many cysts, it is not uncommon to find the contents of no two cysts precisely alike. Blood is, not very uncommonly, effused into the cavity of ovarian cysts, and the transformations through which the blood passes give rise to peculiar appearances, the contents then assuming various dark shades of color. There may be flakes of fibrinous matter together with fluid, or the contents of the cyst may be distinctly puriform. In some cases there is an admixture of fatty degenerated structures. The consistence of the contents is peculiar. In almost all cases there is remarkable viscosity, and the contents of ovarian cysts are sometimes so extremely tenacious that the whole mass when pulled out holds almost inseparably together. The chemical constitution of the fluids of ovarian cysts is as follows:

Solid matters.....	58	per 1,000 (average of 31 analyses)
Pure albumen.....	43	" 1,000 " " 26 "
Salts	7	" 1,000 " " 15 "
Fatty matters and fibrin in small quantities.		

The foregoing figures embody the results of analyses made by Becquerel of the contents of ovarian cysts taken from ten individuals. The average only is stated above, but there was a very wide range in the proportions of the different constituents in different cases. Thus the figures representing the highest and lowest proportion of solid matters were 101 and 21; the highest and lowest for albumen 90 and 17; for salts 10 and 1½. These results are calculated from a table which will be found in Mr. Clay's translation of Kiwisch, and which was supplied to Mr. Clay by Becquerel.

In an elaborate paper by Dr. Wilson Fox* will be found

* "Med.-Chir. Trans.," vol. xlvii., p. 272.

an account of the qualitative analyses of the contents of ovarian cysts. "The results tend to show," Dr. Fox believes, "that in these fluids there is a considerable difference between the contents of the different cysts. In all, the reactions obtained are more akin to those modifications of albumen discovered by Professor Scherer, and termed by him metalbumin and paralbumin, than to any of the hitherto isolated members of the series." The reaction was always alkaline, there was no precipitation with acetic acid, a point distinguishing these fluids from mucus. Waldeyer, Koeberlé, and Thornton consider that ovarian fluid is usually characterized and distinguished by its containing paralbumin, which substance is thrown down by heating the fluid, and is dissolved by strong boiling acetic acid. Dr. Drysdale (Philadelphia) considers that ovarian fluid is characterized by the presence of what he terms "the ovarian granular cell." This cell is an albuminoid body containing little fatty particles which give it a granular appearance. This ovarian cell is changed little by acetic acid. Dr. Drysdale gives these statements as the results of very numerous observations.*

It appears that when ovarian tumors are simple or innocent, the "ovarian" cells of Drysdale only can be observed. But when the tumors are of a malignant character other cells are liable to be observed in the fluid. And the examination of the peritoneal fluid in cases of ovarian malignant tumor discloses presence of peculiar cells, which would indicate that the tumor is not simple. Mr. Thornton† and Dr. Foulis‡ separately made this observation. These "malignant" cells are large pear-shaped, round, or oval cells, containing a granular material, with one or several large nuclei, with nucleoli and transparent globules. Dr. Foulis considers that presence of masses of sprouting epithelium indicates malignant peritonitis, especially when they are found in large number in bloody ascitic fluid. It appears to be a more serious matter prognostically when these peculiar cells are contained in peritoneal fluid than when they are taken from the interior of a cyst. Dr. Emmet, comparing statements of various observers, comes to the conclusion that malignant ovarian tumors are more common in this country than in America.

* "Trans. Amer. Gyn. Soc.," vol. i., p. 195.

† *Brit. Med. Journ.*, Sept. 7, 1878.

‡ *Ibid.*, July 20, 1878.

An important fact here to be noted is, not only that the same cysts have not at all times like contents, but that the same cyst tapped at different periods may give issue to fluids of varying degrees of consistency.

DERMOID CYSTS OF THE OVARY, CONTAINING FAT, HAIR, TEETH, BONES, ETC.

These form a well-marked and distinct class, not in reference to their outward form, but to the nature of their

FIG. 207.*



contents. They are not very commonly met with. The term "dermoid" has been applied to them from the nature of their contents, which are epidermic in character. They vary in size from a millet-seed to that of several inches in diameter. Usually there is found in the cysts a lining composed of a substance like the cutis vera, in which may be

* Fig. 207, from Cruveilhier, exhibits a dermoid cyst with its contents, consisting of hair, hair follicles, adipose tissue, etc.

traced structures identical with those of the true skin, viz., papillæ, sebaceous follicles, and hair bulbs, together with sweat-glands. Masses of fat intermixed with hair, the latter rolled up in balls, and teeth, with plates of bone—some or all of these form the contents of the cyst. But, together with these products, which have given the name "dermoid" to this variety of cysts, they frequently contain fluid, gelatinous material, and glandular growths such as are met with in other kinds of ovarian cysts. When the cyst has been the seat of inflammatory changes, pus may also be found within it.

They are found at all ages, in the child, in the woman, and after the period of sexual vigor is passed. Compared with other ovarian cysts they are rare; they seem to have been observed prior to puberty more frequently in proportion than other ovarian cystic tumors.

The precise nature of these curious growths has been a matter of controversy. It appears certain that they originate in the Graafian follicles. The presence of hair, teeth, and bones, was naturally suggestive of the idea that the cyst was a product of generation, until it was known that they are formed quite independently of sexual intercourse. In an elaborate paper on the subject* Dr. Julius Pauly says: "The most generally accepted theory attributes their development to a process of separation by strangulation occurring during embryological growth, such as Remak assumes for the cholesteatoma and Thiersch for the dermoid cysts—like formation of subcutaneous dermoid cysts by simple invagination of the skin and strangulation of the sacs of epidermis from which are formed the future hair follicles, with the difference that in the deeply-seated ovarian dermoids the closure of the abdomen has to be considered."

This theory involves the *congenital* origin of dermoid cysts of the ovary. The germs of the tumor exist from birth, but puberty or marriage produces, in many cases at least, the *development* of the tumors. The *ages* in 103 cases were as follows:

1-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	50-55	55-60	60-65	65-70	over 70
4	3	10	8	12	14	10	11	8	10	5	3	1	2	2

From a *few* recorded cases it seems likely that these der-

* Trans. in *Amer. Journ. of Obst.*, vol. viii., p. 404.

moid cysts are not seldom associated with a more or less undeveloped condition of the sexual organs.

Waldeyer's theory is as follows: "The epithelial cells of the ovary are capable in the way of ordinary proliferation of furnishing differently formed products than are usually found during the division of cells, when the descendant cells always bear the same character as the parent cells. This power, peculiar to the epithelium of the ovary, is made comprehensible by the fact that all ovarian epithelium must be considered as undeveloped germinal cells, or undeveloped ova. If a proliferation of the deep-seated ovarian epithelium takes place in the ordinary manner, in most cases a myxocystoma (colloid cyst) will be the result; whereas, if the proliferation referred to is attended with a deviation of the products of development a dermoid cyst will be formed."

Dr. Barnes states that dermoid cysts are usually roused into active mischief under the influences of pregnancy and labor after remaining dormant and unrecognized perhaps for years previously. He relates four cases; in two of these the cysts were not discovered till after labor, when both suppurated.

Dr. Mundé* relates a similar case. The suppurating cyst was observed seventeen months after a confinement—*hair* passed with the discharge. There was a hard tumor behind uterus opening into vagina.

The accurate account of the anatomy of these cysts, put forward by Steinlin,† showing the presence of a skin-like structure in the cyst, explained why the cyst was found to contain skin secretions, viz., hair, sebaceous matter, and teeth. The late Dr. Ritchie‡ expressed his belief that every dermoid cyst of the ovary is really an ovum which has undergone a certain amount of development; that it is a perverted attempt at parthenogenesis.

Dermoid cysts of the ovary run generally a slow course. They may inflame, suppurate, and ulcerate, and death may be the result of such alterations. In some cases the cysts have ruptured into the peritoneum, in some they have ulcerated into the bladder, with the result that the patient evacuates hair, etc., with the urine.

* *Amer. Journ. of Obst.*, vol. xi., p. 578.

† "*Zeitsch. f. nat. Med.*," Band ix.

‡ "*Ovarian Physiology and Pathology.*" London, 1865, p. 175.

COMPOUND OR COMPOSITE OVARIAN TUMORS.

The *partly solid, partly cystic* structures found in many ovarian tumors, and for which the appropriate designation is "compound" or "composite," will next engage our attention.

Of late years the occurrence of a substance containing and surrounded by cysts, and having itself a great resemblance to mammary glandular tissue, has attracted attention. It was termed by former writers "cystic sarcoma." Mr. Spencer Wells* proposed to designate it "adenoid tumor," or "adenoma" of the ovary. He described it as "identical in structure with the adenoid growths first described in connection with the mammary gland," and consisting of "delicate fibrous stroma, forming round or oval alveoli, the latter lined by densely-grouped epithelial cells forming a zone enclosing an area loosely packed with cellular elements of a similar form."

Another variety of the partly solid and partly cystic tumors of the ovary is that hitherto known as "alveolar" or "pseudo-colloid" disease of the ovary. It was for some time considered to be carcinoma of the colloid variety, but this idea is now entirely abandoned. The surface of the section of such a tumor resembles, as Dr. Farre,† who has well described it, remarks, "a fine sponge, the alveolar spaces being condensed and somewhat flattened, in consequence of the profusion with which the alveoli have been developed" (see Fig. 205). "These cysts are filled with a viscid mucus-like material, resembling half-liquid jelly." The mass on section sometimes resembles a honeycomb. Respecting the nature of these adenomatous and alveolar growths more will be said presently.

Cystoid cancer constitutes another composite tumor. Here the more ordinary cysts are present, together with medullary cancer, the cancerous growths pervading the stroma of the ovary, and pervading, as is the manner of cancerous growths in other parts of the body, in succession, the adjacent structures. As is the case in the two preceding groups, the proportion of solid matter to cystic growth varies in different cases and at different periods in the same case. In cases of cystoid cancer the tumor—semi-solid, or

* Report of Pathological Society in *Med. Times and Gaz.*, Oct., 1862. See also "On Diseases of the Ovaries," vol. i., p. 122.

† *Loc. cit.*, p. 592.

nearly solid to the feel at one part, more or less fluid at another, presenting often rounded eminences on its surface—may grow with great rapidity, and the whole tumor may be of considerable size. The cysts are liable to contract close adhesions of a more vascular nature than usual to surrounding parts. In a case operated on by myself these adhesions when broken bled most profusely.

The nature of *adenomatous* or *glandular* and alveolar structures, and their relations to cystic and cystoid growths of the ovary, have undergone a most careful and complete investigation at the hands of Professor Wilson Fox, the results of whose researches are contained in a paper in the "Medico-Chirurgical Transactions"* for the year 1864, and whose conclusions, demonstrative in themselves, have been verified by subsequent observers.†

It appears necessary (following Dr. Fox) to go back to the primary developments of the ovary, and of its contents, in order to arrive at an explanation of the structure of these cystic growths. Pflüger's‡ observations on the development of the ovary in the calf and the kitten show that the Graafian follicles begin in these animals as *tubes*, these tubes becoming constricted at various points, in order to form the separate follicles. Dr. Wilson Fox has found the human ovary in early embryonic life to contain tubules, or quasi-tubular structures intimately concerned in the production of the Graafian follicle. Now, Dr. Fox has made out that in many cystic growths of the ovary there is met with a structure of tubular character, wherein occur changes analogous to those observed by Pflüger in the development of the Graafian follicles of some other animals, viz., formation of tubes, or glands, and constriction of these tubes at certain points, one result of which is formation of cavities or cysts within this glandular tissue. It appears that Billroth, from observations in the thyroid gland, had come to the induction—"brilliant," as Dr. Fox terms it—that similar tubular structures would be found in ovarian cystic tumors. Dr. Fox has furnished the experimental proof that this is the case. It is his belief that "these tumors of the ovary (containing glandular structures) should be classed with those which originate in other glandular organs, by an ab-

* "On the Origin, Structure, and Mode of Development of the Cystic Tumors of the Ovary," vol. xlvii., p. 227.

† Dr. Braxton Hicks, Mr. Hulke.

‡ "Ueber die Eierstöcke der Säugethiere und des Menschen," 1863.

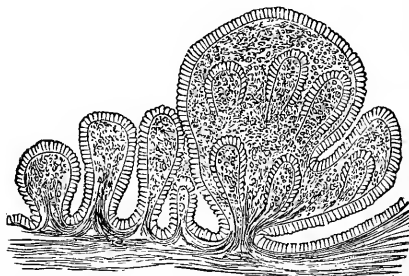
normal repetition of the processes of development observed in the foetal condition, recurring with aberration in the adult." *

Dr. Fox's results are based on an examination of fifteen cases of ovarian tumor, in nine of which he was able to trace the formation of secondary cysts from tubular or glandular structure within cavities which appeared to have been Graafian follicles.

A brief abstract of Dr. Fox's account is here given:

The *lining* of the parent cysts presents usually a spheroidal epithelium in one or several layers. The growths which proceed from the internal walls Dr. Fox describes as "papillary," "villous," or "glandular," these terms indicating the physical characters of the growths.

FIG. 208.



The papillary growths, as represented by Dr. Fox (see Fig. 208), are composed of processes of delicate hyaline stroma, covered with epithelium, spheroidal or columnar, and tending to form large composite masses from repetition of the same process of growth from the sides of those already formed. The surface of the growths is finely villous, they are very vascular, and may attain considerable size. They are solid, but adjacent ones often grow together, and hence are formed between them narrow crypt-like spaces. Thus originate "secondary" cysts, and *in the secondary cysts* further growths occur. Concurrently, also, the original cyst necessarily increases in size, and secretions form in the interior. Dr. Fox considers that the formation of secondary cysts, as *thus* described, does not occur to a great extent.

* "Med.-Chir. Trans.," vol. xlvii., p. 275.

The "*Villous and Glandular*" Growths.—Fine "villous" processes are the first stage in the formation of the "glandular" growths. The villi contain very little stroma, thus differing from the papillary growths just described; they are little more than a loop of vessels supported by a little connective tissue, and are covered by several layers of epithelium of columnar form. When closely clustered, they lead to formation of glandular structures. The elevation and

FIG. 209.

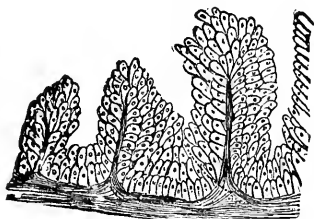


FIG. 210.

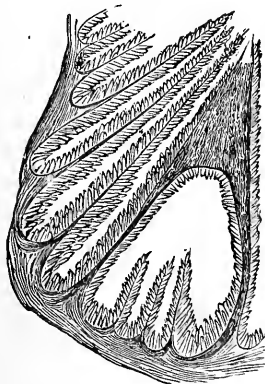
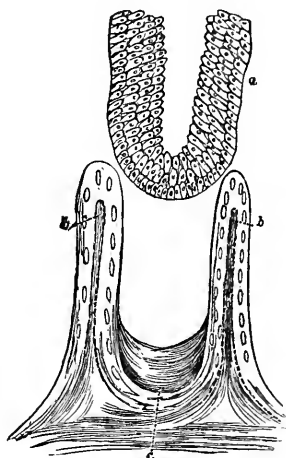


FIG. 211.*



lengthening of the villi result in the formation of corresponding depressions between them, the stroma growing upward and surrounding these pits or hollows, the result being a series of tubular spaces. The first stage is represented in Fig. 209 (from Fox), and the latter one in Fig. 210. The glands thus formed are from $\frac{1}{100}$ to $\frac{1}{400}$ of an

* Fig. 211 (from Fox) shows epithelium separated from papillæ.

inch in diameter; they are lined by several layers of epithelium. Further growths of villi may occur in the base of each tube. *Cysts* are formed in the resulting glandular tissue thus: The orifice may be occluded by growing of the opposite walls together, as shown in Fig. 210, or by septa growing across the tube, or by the stroma actually growing over and surrounding a cyst already formed within the parent cyst, one result of which is formation of a compound growth, and the glands and glandular masses may be found protruding through or still embedded within the stroma. The process of cyst formation in these glandular structures may be repeated *ad infinitum*.

A gland shut off and divided by septa becomes thus changed into a cavity with highly marked alveolar structures. Some of the alveolar spaces in the ovary originate in a kind of failure in the development as here described, but generally these alveolar spaces contain the same lining as that of the glands from which they spring, and the same tendency to further and fresh formations of glands. Dr. Fox's anatomical description accords with Rokitsansky's, Virchow's, and Förster's, but his view as to the origin of these alveolar structures is new and different.

When the stroma grows in excess, we get a dense tissue permeated with alveoli—the condition described by Mr. Spencer Wells as “adenoma.”

From the formations described by Dr. Fox, the secondary cysts and all the consequent varieties of structures in these diseases, originated in nine out of the fifteen ovarian tumors examined.

Another mode of cyst development with Graafian follicles was observed in a few instances, viz., a growth of glands superimposed one on the other by a process equivalent to budding. This process was found occurring simultaneously with the other mode just alluded to. Alveoli may arise from the close packing of a number of these thin-walled cysts.

Dr. Fox's conclusions imply the origin of these varieties of ovarian disease in the interior of Graafian follicles—well or imperfectly developed—and he would account for the origin of the dermoid cysts in the same way, although he has not actually had an opportunity of examining these latter structures.

Dr. Ritchie* endeavored to prove that the ovum itself

* *Op. cit.*, p. 197.

becomes developed in an irregular way, and gives rise to some of the forms of ovarian disease. Dr. Fox does not participate in these views.

Diseased processes are liable to occur in these compound or composite tumors. The external or parent cyst may give way on the surface, the contents escaping, and the growth within protruding again, the septa within undergo fatty degeneration. Bleeding may occur within the cysts, and inflammation, formation of pus, etc.

SOLID TUMORS OF THE OVARY.

Following the classification of Kiwisch, these tumors may be arranged as follows: 1. Hypertrophy; 2. Adipose (dermoid) cysts; 3. Apoplexies of the ovary; 4. Fibrous tumors; 5. Enchondroma; 6. Cancer. To these may be added, 7. Tubercle.

The tumor constituted by simple hypertrophy of the ovary never attains any considerable size, probably not above that of a pigeon's egg. There is a remarkable case, however, recorded by Dr. Bright, in which both ovaries were found after death enlarged pretty equally, and each constituted a firm fleshy tumor nearly six inches in the longest diameter, and having the shape of a kidney. They were taken from a patient who had borne children and who had passed the menstrual period of life. She had experienced pain referable to the uterus, a hard substance had been perceptible over the pubic region, and there had been considerable difficulty in micturition. She died, greatly emaciated, and having had jaundice and ascites. The tumors were not malignant in character.*

The *dermoid cysts* have been already considered (p. 347).

The *apoplexies of the ovary* are constituted by inordinate effusion of blood and coagulation of the same, in Graafian follicles, or by hæmorrhage into pathological structures of various kinds, such as cysts, or in the interstices of growths of cancerous or colloid matters. In the former case the tumors produced by the hæmorrhagic effusion are very limited in extent; in the latter they may be very considerable.

Fibrous tumors are met with in the ovary, in many respects resembling those found growing so frequently in the walls

* "Clinical Memoirs on Abdominal Tumors" (New Syd. Soc.'s edition), p. 146.

of the uterus; but a distinct independent pedunculated fibroid tumor of the ovary is a very rare pathological product, many cases recorded as such having really a true uterine origin. The fibrous growths met with in combination with cystic disease of the ovary belong to a different category, and are not so uncommon. The solid independent fibroid tumors of the ovary have been found sometimes to undergo osseous transformation, and the same may probably hold good with reference to other fibrous tumors.

Enchondroma of the ovary is very rarely observed.

Cancer of the ovaries constitutes one of the most important varieties of solid tumor. It occurs in two forms, scirrhus and medullary, the latter being the more common. Cancer occurring primarily is more frequently than not associated, as has been already stated, with cystic disease of the organ, or it may be found affecting the cystic growths secondarily. The hard form of cancer of the ovary does not attain a large size; it does not exceed the size of a child's head, and is usually very much smaller. Cancer of the ovaries may be found in association with cancer of the adjoining parts—that is, it may spread into the ovaries from the uterus or other organs, and may involve, more or less, the whole contents of the pelvis; and it may, when so found, originate in the ovary or in the adjacent organs. True cancerous disease of the ovary of large size is rare, unaccompanied by similar disease in adjacent parts; and it is also rare to find carcinomatous diseases of the ovary uncomplicated with cystic disease of the same organ. Ascites is very frequently associated with, and is an effect of, cancerous disease of the ovaries. Dr. Washington L. Atlee describes four interesting cases of sarcoma of the ovary.*

Case I.—Æt. 30; uterine hæmorrhage, convulsions, miscarriages, dropsical, anasarca; on examination, abdomen size 6-7 months' pregnancy. Two tumors, one each side, both oblong, kidney-shaped, hard, nodulated, like a cirrhotic liver, movable; uterus central, normal. Diagnosis, malignant disease of both ovaries. Result not known.

Case II.—Æt. 32; three children; two months noticed a tumor, found to be ascites. Tapped. When seen two days later size of pregnancy at term. Diagnosis, a compact, small-celled multilocular tumor of right side, with peritoneal fluid. Tumor removed; incision 6-7 inches; shape

* "Gyn. Trans.," vol. ii.

enlarged kidney; 3 lbs., nearly 12 inches long by 6; hard, nodulated, mostly solid, some cysts in it. Microscope showed fibrous stroma, variously shaped cells, containing oil globules and granular matter cells; round, oblong, or oval, contained many nuclei. It seemed to be fibro-carcinoma, according to Rokitsky's description. Rarest form of cancer of ovary. Patient died in thirteen days.

Case III.—Æt. 30; two children; disease began about four months. Tumor irregularly ovoid to above umbilicus; hard, nodulated, like hob-nailed liver; no dropsy. Did not recommend operation. Dr. Thomas afterward operated: removed both ovaries (and injected milk); saved life, but three months afterward patient died from carcinomatous tumors of abdomen.

Case IV.—Æt. 30; three children, last eighteen months; two months before seen noticed lump in right inguinal region; rapid increase; hard, nodulated tumor felt; abdomen size of full gestation. Two months later fluid in peritoneum. Tapped; 26 pints. Two tumors felt below, very hard, nodulated. Ovariectomy. Diagnosis before, malignant disease of ovaries. Both ovaries removed, pedicles tied and dropped. Microscopic examination of juice showed a moderate number of round, oval, and spindle-shaped cells with large oval, regularly formed nuclei, and generally with bright nucleoli, closely corresponding with appearance of spindle-celled sarcoma. The committee consider the tumors of this character.

Tubercular disease of the ovary has been occasionally met with in conjunction with cystic ovarian disease, not forming a definite tumor, but occurring in the form of granulations scattered over the peritoneal aspect of the cysts.

THE NATURAL HISTORY OF OVARIAN TUMORS AND OVARIAN DROPSY—THE DATA FOR PROGNOSIS AND TREATMENT.

Here we shall devote a short space to some remarks concerning the natural history of ovarian tumors and ovarian dropsy, including their mode of growth, and duration, also the danger to life, and the mode in which life is destroyed by them.

The rare *fibrous tumor of the ovary* is generally of slow growth, but some tumors (reputedly) of this nature grow now and then rapidly. When of great size such a tumor may give rise mechanically to a fatal result, by impeding in

some way the due exercise of the functions of neighboring organs, or by giving rise to enormous ascitic distension. The latter secondary effect may threaten the patient's life.

The affections of the ovary to which most interest attaches are those of a *cystic* nature, and in which the disease is constituted by the presence in the ovary of cysts, or of cysts associated with solid matters of various kinds.

The *cysts* of the broad ligament grow slowly, but may after some years acquire great size. The *dermoid* or *fat cysts* present peculiarities, rendering a separate consideration of them necessary. Their course is usually slow; they may exist for some years without increasing remarkably in size, but they appear liable at any moment to undergo changes of a character fatal to the patient, viz., inflammation, formation of pus, perforation and rupture. The contents of these cysts—viz., fat, hair, teeth, or other matters—become evacuated into the intestines, into the peritoneum, or into the bladder, and the patient may perish from the effects of the mischief thus set up. The result of injecting iodine into the interior of a cyst of this kind, in a patient under the care of Dr. Alex. R. Simpson, does not offer encouragement to the pursuance of a similar treatment in future.

The other varieties of cystic affection of the ovary (for an enumeration of which see p. 338) require a longer notice. The variations in respect to the number of cysts affected with disease in a particular case are great: their contents also vary. In another circumstance also there is very great variability, viz., in respect to the progress made by what appears to be the same disease under different circumstances. And it is this great variability which infuses to so great an extent the element of uncertainty into our speculations as to the future of particular cases.

In cases where there is *one large simple cyst* of the ovary, with contents fluid or semi-fluid, the course of the case will probably be as follows: The cyst itself goes on increasing in size until it occupies the greater part of the abdomen, pushing the viscera of the abdomen upward and backward; the rate of increase may be fast or slow. It may remain in the pelvis, or it may leave this cavity altogether. The further history of this cyst will vary according as more cysts become developed below, or within, or upon it, or according as it remains single or the reverse. If no further development of cysts take place, this primary large cyst may go on slowly increasing in size, or, having arrived at a

certain state of fulness, may remain quiescent, and the patient may live several years, suffering chiefly from the mechanical inconvenience and distress produced by the great enlargement of the abdomen. The walls of the cyst may become accidentally ruptured, and the contents effused into the abdomen, or into some of the adjacent viscera; and under these circumstances the patient may be killed thereby; and, such rupture having taken place, the cyst may go on secreting anew, or no such further secretion may take place, and a cure may be witnessed. The distress and distension may, at a comparatively early period of the history of the case, be so great as to call for surgical relief—*e.g.*, tapping—and if tapping be performed, the cyst may refill again and again with great rapidity, the patient soon sinking from the effects of so great and continuous a loss. In some rare cases the disease has disappeared after one tapping.

The aspect of the case will also vary according to the relations of the tumor. Thus, if the cyst become fixed by adhesions in the pelvis at an early period, the mechanical difficulties thereby produced will be greater than where no such adhesions exist. And this circumstance has an important relation to the prognosis of the case, for the existence of the patient may, under such circumstances, be prematurely cut short by the disturbance of the renal secretion due to pressure on the ureter; such pressure giving rise to distension of the ureter and of the pelvis of the kidney. The functional disturbances of the other abdominal viscera are pretty much the same in cases of large cyst, whether the cyst extend into the pelvis or not.

The foregoing summary includes the principal features of one class of cases as they occur in practice, and it will at once be remarked how very variable is the course observed. It is impossible to ascertain positively what the future course of a particular case will be, although the previous history frequently affords valuable hints on the matter. There is one circumstance in connection with these cases which appears to have received less attention than might have been expected, *viz.*, the possible influence exercised by a large cyst already in existence in preventing the development of fresh cysts. Some apparent anomalies in connection with the results of the operation of tapping in cases of this kind are in part explainable by admitting that an influence of this kind may be exercised. The operation of tapping has in many cases appeared to accelerate the fatal

result; it is certain that the disease has advanced much more rapidly after its performance in a considerable number of instances. In a certain proportion of these cases the fatal event is connected with the rapidity with which the cyst refills after being emptied, but in not a few it would appear that other cysts start into activity which would probably have remained quiescent if the primary cyst could have been left undisturbed.

An element of an unfavorable kind in the prognosis of a case where there is only one large cyst of the ovary, is the rapidity with which that cyst fills or refills after being tapped; danger from this tendency to refill is one less in degree than another which is to be feared at some future time, viz., the starting into activity and growth of other cysts; and there can be no question that, short of a radical cure, the restriction of the disease to one large cyst is one of the best results to be looked for. A careful survey of recorded facts appears to warrant the conclusion that the tendency to cyst formation in the ovary is often temporary, apparently exhausting itself in the production of one large cyst. Thus, supposing that the tendency to new cyst formation has in a particular case been arrested, the patient is less likely to succumb to this disease. The patient may still die from the perpetual drain on her system, caused by repeated refilling and evacuation of this cyst, or in some one of the other ways pointed out. But at first, and indeed for a very considerable time, it is always difficult to say whether the arrest alluded to has occurred.

Compound Cystic Tumors.—Here the tendency to cyst formation is, it may be from the first, not limited as above, but there is a successive production of cysts within, or upon, or below, those first formed. The cysts may grow with excessive rapidity, and the whole abdomen may very quickly become filled. This may occur either primarily, so to speak, or, one or two large cysts only having for some time existed, the abdomen becomes suddenly and alarmingly invaded by a multitude of new growths. The prognosis of cases of the kind now mentioned is very unfavorable. It is so bad, indeed, that Dr. Bright was accustomed to use the term "malignant" in describing such cases. The use of the word "malignant," so applied, is liable to lead to misconception, this term being now more generally limited to actual cancerous disease. In the cases now under consideration there is not, except in very rare cases, any cancerous

formation at all, the fatality depending on the mechanical interference of the ovarian tumor with the functions of life. When we find an ovarian tumor suddenly take on rapidity of growth, and are able to satisfy ourselves that this increase in size is not due to simple enlargement and distension of one or two previously existing cysts with fluid, the case is assuming a very threatening aspect. If the tumor become more irregular to the feel, if the fluctuation become indistinct while the tumor is evidently growing fast, these are facts confirmatory of the supposition that the tumor is the seat of rapid and extensive cyst formation.

Composite Tumors.—Another class of cases have now to be spoken of, in which there is formation of a considerable amount of solid matter, together with cystic disease of the ovary, there being simultaneously production of cysts and of the solid matter in question. Such cases often proceed with exceeding rapidity, and their prognosis is bad, the patient being generally killed with a rapidity commensurate with that of the increase in the size of the tumor. Cases are sometimes met with where, at a very advanced stage of the disease, no further increase in size appears to take place.

Lastly come those cases where the ovary, either previously the seat of cystic disease or not, becomes affected with *cancerous disease*. The prognosis in such cases is almost identical with that of cancer in other parts of the body. The disease termed "alveolar cancer," or pseudo-colloid disease, is not really cancer. In ordinary cancer of the ovaries, the prognosis is necessarily of a gloomy character, the disease spreading from or to the adjacent organs, and soon destroying the patient. But the diagnosis of these cases is very frequently only made during the operation of ovariectomy.

The *manner in which ovarian dropsy kills* varies in different cases. It is in many instances a slow production of death by exhaustion consequent on repeated drains from tapping. It is due often to intercurrent, slight affections, which would have produced little effect in a healthy individual. Thus, when the breathing is mechanically restricted, a slight inflammation of the lungs may rapidly prove fatal. In ordinary advanced cases of the disease, the mechanical disturbance of the functions of the great viscera—the heart, the liver, the kidneys (as by pressure on the ureters), the stomach, etc.,—gives rise to various alterations which directly

and indirectly impair the vitality of the individual. Restricted as to her food, restricted as to her capability of moving about, suffering from frequent nausea, sickness, prevented from sleeping, tormented by pains and inconveniences too numerous to mention, the sufferer from advanced ovarian disease presents a most lamentable spectacle. The condition of the patient is often the more painful, as it is quite evident that the other organs of the body are sound, and that, apart from the ovarian disease, there is nothing materially wrong.

The patient may be killed by rupture of the cyst, by inflammation of the same; in compound cysts, by inflammation and pyæmia consequent on softening and breaking down of the septa between the different cysts. Hæmorrhage into the cyst cavity is another accident which may occur. Each and any of these events may lead to a fatal result, but they may also, and do occasionally, bring about the cure of the disease. Rupture of the cyst is not very rare: the cyst may burst into the peritoneal cavity, or into any of the adjoining viscera, or it may perforate the abdominal wall. Such rupture is often the result of a blow, a fall, or an accident of some kind. When the fluid escapes into the peritoneal cavity, excessive diuresis generally occurs, and the size of the abdomen lessens. This rupture may kill the patient, as before remarked, but it has in a few recorded instances resulted in cure. In certain rare instances the pedicle of the tumor becomes twisted on itself, and the patient is killed by mortification of the tumor.*

The Relation of Ovarian Tumors to Pregnancy.—Difficulties may attend the process of gestation and parturition of a mechanical nature; ovarian tumors are, it appears, sometimes liable to undergo, during pregnancy or immediately after delivery, a softening or inflammatory process, attended with danger to the life of the patient. I was acquainted with the particulars of a case in which a woman had borne well and easily five children, having had a large cystic tumor of the ovary during the whole period; but I know of another case where the patient died, apparently from rupture of an ovarian cyst, shortly after the labor had occurred. Cases bearing on this point have been collected and commented on by Mr. Spencer Wells, Dr. Braxton Hicks, and

* See cases of this kind in "Year Book of New Syd. Soc.," 1869-70, related by Mr. Lawson Tait, Dr. Kidd, and Dr. Barnes.

others.* It appears that in many cases, however, the labor is not unfavorably influenced by an ovarian tumor; but unquestionably this immunity cannot be guaranteed. The remarkable results obtained by Mr. Spencer Wells and others, in operating on such tumors while the patient is actually pregnant, and without interfering with the progress of the pregnancy, necessarily affect any consideration of a prognostic nature applied to such cases.

CHAPTER XLVIII.

DISEASES OF THE OVARIES—(*continued*).

DIAGNOSIS OF OVARIAN TUMORS FROM UTERINE TUMORS.—Enumeration of the various Forms of such Tumors—Diagnosis as affected by the Condition of the Menstrual Function—Question of Pregnancy—Diagnosis as affected by other Particulars—History, Results of Examination, etc.—Use of Sound—Fluctuation Test—Diagnosis by Exploratory Incision.

DIAGNOSIS OF THE NATURE OF AN OVARIAN TUMOR.—Enumeration—Complications—Duration—Condition of the Surface—Tapping as a means of Diagnosis.

DIAGNOSIS OF OVARIAN TUMORS.

It must be confessed that the diagnosis and precise nature of an ovarian tumor is now and then beset with extreme difficulty. The majority of cases are readily recognized, but there are numerous exceptional ones.

In the Appendix will be found a description of the procedure to be adopted in making an examination of the abdomen in order to discover the nature of a supposed enlargement or tumor. It will be necessary to proceed with the examination as there directed in order to ascertain that a tumor is actually present. When it has been determined that there is an abdominal tumor, and further, that such tumor is *either ovarian or uterine*, we have, in the next place, to distinguish between these two.

The *uterine* series include—pregnancy, polypus, fibroid tumor; distension of uterus by fluid (menstrual or other

* "Obst. Trans.," vol. xi.

fluid accumulations); distension by gas; abscess of the uterus; carcinoma of the fundus of the uterus; and fibrocystic tumor.

The *ovarian* series include—simple encysted ovarian dropsy; multiple and compound cysts; composite tumors, partly cystic and partly solid, including “alveolar degeneration,” “glandular” tumors; cystic cancer; dermoid cysts; and solid tumors of the ovary—fibrous tumors, “adenoma,” cancer, and simple enlargement; hydatid cysts; to these must be added, though not really ovarian, cysts of the broad ligament, also termed Wolffian cysts.

The Diagnosis between Uterine and Ovarian Tumors as affected by the Condition of the Menstrual Function.—If there has been no menstrual discharge for some time previous, we may suspect pregnancy, and the next thing to be done would be to ascertain whether the size of the tumor, its shape, etc., fall in with this view of the case. If the tumor had only lasted a few months—say six—and there had been no menstruation for six or eight months, this would constitute a sort of preliminary justification of the pregnancy theory. If the tumor had lasted six years, and menstruation had been absent for six months, this would be against pregnancy; but not absolutely so, inasmuch as there might be a tumor *plus* pregnancy. If the external examination by hand, stethoscope, etc., give no indication, or insufficient at least on which to form a conclusion, then a vaginal examination, an examination of the breasts, etc., would be required.

The investigation of the history of the case and the examination practiced giving, we will suppose, no evidence of pregnancy, the next step to be taken is to prove a negative, and to determine positively that the patient is *not* pregnant. This second question is more difficult, or may be more difficult, to deal with than the first, for very obvious reasons. Thus the case before us may be of this kind: the patient has not menstruated for four months, there is a tumor in the abdomen the size of the gravid uterus of six or eight months, there is no sound of a foetal heart, the breasts are painful, perhaps swollen, the uterus is, from the vagina, felt to be enlarged, but there is no ballottement. In such a case the observer will, on the data mentioned, find it difficult to exclude pregnancy—to prove the negative. It may be that his ear is defective, his touch untutored; the case may still be one of pregnancy; it may be one in which—as is not so very rare—there is a slight menstrual-like dis-

charge for one or two months, or longer, pregnancy really dating from an earlier period; or it may be pregnancy with destruction of the embryo, and hydatidiform degeneration of the ovum, as in an instance recorded at page 874. The condition of the orifice of the uterus would, under such circumstances, help the observer either to prove the desired negative, or be sufficient to show him that the making of the diagnosis must be for a while postponed. The state of the lower segment of the uterus, also, would very greatly assist in the desired solution. Thus, in the case of an abdominal tumor as large as a seven or eight months' gravid uterus, it would be sufficient to prove the required negative, if we found that there was absolutely no evidence of the os uteri being continuous with a rounded tumor, perceptible to the touch equally behind, in front, and at the side of the same. When the suspected abdominal tumor is the size of the six months' gravid uterus, and upward, the vaginal digital examination is of the greatest service in enabling us to prove the negative, when the case is really not one of pregnancy.

The next class of cases to be considered is that in which *menstruation is present*. If the patient be menstruating regularly, and the fact be undoubted, it may be almost certainly concluded that the tumor is not due to either one of the following conditions, viz., pregnancy, distension of uterus by fluid or gaseous accumulation, abscess of the uterus.

In fibroid tumors of the uterus, in carcinoma of the fundus uteri, in the various forms of ovarian disease, whether cystic alone, or composite tumors, or solid tumor, menstruation may be still regular, or comparatively so, or it may be completely absent. Presence or absence of menstruation may be thus equally observed in certain uterine and in certain ovarian tumors.

The menstruation criterion failing, we have to fall back upon the data afforded by other particulars of the history of the case, and the results of examination, abdominal, vaginal, etc.

We may dispose of several of the minor and less frequent of the causes of abdominal, uterine, or ovarian tumor, now remaining on our list, in a very few words.

Carcinoma of the Fundus Uteri.—The symptoms attending this rare disease would be likely to resemble those attendant on polypus of the uterus—*i.e.*, copious bloody dis-

charges, leucorrhœa—but in some cases such have been wanting. The supra-pubic examination by the hand would substantiate little beyond the existence of a tumor of a rounded character, the size of which is limited.

We may get rid of the *simply solid tumors* of the ovary in one paragraph, with one or two reservations. It is very rare to find a *fibroid* ovarian tumor of any considerable size, but the diagnosis of a large tumor of this kind from a large tumor of similar physical characters growing from the uterus would be next to impossible. Thus, simple cancer of the ovary rarely produces a tumor of any magnitude, although certain *composite* tumors of the ovary, partly cancerous, may grow to an enormous size. Moreover, simple cancer of the ovary is rare, unless in cases where there is extensive carcinomatous affection of the adjacent or other parts, and consequently profound constitutional disturbance. *Enchondroma* of the ovary is a very rare disease, the existence of which even has been questioned, and it need not therefore detain us. With *simple hæmorrhagic effusions* we have no practical interest in this place. *Hypertrophy of the ovaries*, in the single case recorded by Dr. Bright, produced a tumor not larger than the kidney, and this was a most rare phenomenon. The *Wolffian cysts* of the ovary rarely exceed the size of an orange, but when larger the tumor could not be distinguished from an ordinary ovarian cyst. *Adenoma* of the ovary may constitute a hard tumor of considerable size. *Dermoid* cysts are rare, but in their physical characters, mode of growth, etc., do not present any very characteristic symptoms. They do not, unless in very rare cases, grow so large as the other more common cystic tumors of the ovary. The *hydatid* tumor of the ovary is very rare, and might be expected to be witnessed only in cases where the liver is affected, and in conjunction with symptoms of chronic or acute peritonitis. Practically, its diagnosis does not possess much interest for us in this place.

Without much difficulty, most of the conditions mentioned may be severally eliminated from consideration. And that being done, the diagnosis now rests between the following conditions:

Fibroid tumor of the uterus.

Polypus of the uterus.

Fibro-cystic tumor of the uterus.

Cystic disease of the ovaries, viz., simple, multiple, or compound cysts.

Composite tumor of the ovary.

Fibroid tumor of the ovary.

Sarcoma of the ovary.

Dermoid cyst.

And to these might be added the case of a large Wolffian cyst.

The conditions in question give rise to tumors which in many particulars resemble each other. The characters which they have in common are the following:

The tumor is, or may be, rounded in shape.

It may be slightly movable in the abdomen.

It may have a more or less chronic course.

It may be associated with serous effusion in the peritoneal sac.

The firmness and resistance of the tumor may be equal in each.

The size of the tumor does not, unless in the case of a very large one, offer any help in the discrimination.

It is true that generally we find marked differences in respect of some of the foregoing characteristics; but these differences are not always so considerable, and by relying too implicitly on distinctions of this kind mistakes are frequently made.

The diagnosis between the various pathological conditions just mentioned is to be made by careful external and internal examination, and by consideration of the previous history. We have now no scruples as to using the uterine sound, having excluded pregnancy from the consideration by previous analysis.

In many cases certain characters of the tumor, as felt through the abdominal parietes, are almost conclusive as to its ovarian origin; one of these is, *distinct fluctuation* from one border of the tumor to the other. Fluctuation of this kind might be observed in that rare disease, fibro-cystic tumor of the uterus. We presume that all cases of ordinary ascites, or of ascites *combined* with tumor, or of distended bladder, have been excluded. The *absence* of fluctuation does not, however, indicate that the tumor is not ovarian.

If we examine the uterus from the vagina, digitally and by means of the sound, and clearly ascertain that the os is natural, that the cavity of the uterus has its normal length,

the conclusion to which we may come is, that it is not a case of polypus of the uterus; but this is the extent of the knowledge afforded. Polypus of the uterus may be excluded in other ways from consideration. Thus, the previous history in cases of polypus is usually one of occasional hæmorrhages, profuse menstruation, leucorrhœa, etc. The diagnostic signs are as follows: There is a hard, smooth, well-defined, abdominal tumor of slow growth, the uterus evidently enlarged from the vagina, its cavity greatly lengthened, a hard tumor is perceptible within the uterus.

Uterine and ovarian tumors have the following characters in common: The pelvic cavity may be found distended by a tumor firm to the touch in both cases. The abdominal tumor may be firm to the touch in both cases. It may be of slow growth in both cases. It may be rounded, smooth, and have a tolerably uniform surface, in both cases. The disturbance of the functions of menstruation and defæcation may be equal. In the shape of the tumor we find no absolutely distinguishing sign.

Let us pursue the investigation further. Supposing that by examining *externally* through the abdominal walls we are able to detect fluctuation in places, or even supposing that we find that in certain parts the tumor is softer and not so resistant as at others, this would enable us to say the tumor is of ovarian origin. To this statement there is one single reservation—that if the rare fibro-cystic tumor of the uterus were present, the sign in question might prove deceptive. The absence of such partial fluctuations, or of such partial softness, does not, however, prove that it is uterine. Or, supposing we found the surface of the tumor very unequal, presenting hard, smooth, rounded, distinct elevations three or four or more in number, and varying in size from that of a walnut to that of an apple or larger—these elevations being evidently integral parts of a central mass, the consistence of which is identical with that of the elevations—this would prove it to be a case of fibrous tumor of the uterus. On the other hand, in the case of very large fibrous tumor, the surface is quite smooth and uniform, and irregularities and eminences of the surface are then quite wanting. Rarely, the hardness generally characteristic of fibrous tumor is wanting. In a few cases there is actual softness and apparent fluctuation. Such a condition would make the diagnosis very difficult. The *duration* of the tumor would in some degree assist, but we

are now and then misled by the patient's assertion that the tumor has existed only a short time, when the opposite is the actual fact. A large fibroid tumor sometimes exists for years unknown to the patient or to any one.

Before describing the internal examination, the *natural history of an ovarian or extra-uterine tumor, so far as relates to its growth and the effect of that growth on the position of the uterus*, may be considered.

A fibrous tumor growing on the peritoneal surface of the uterus, and reaching a large size, and an ovarian tumor, may affect the uterus in like manner. Thus the fibrous tumor may in its growth carry the side, or back, or front of the uterus—according as it may happen to be placed—along with it; the cavity of the uterus may be thus, in the case of a very large fibrous tumor, very considerably elongated; or, it may leave the cavity of the uterus unaffected, the body of the uterus undergoing not an expansion but an actual atrophy, and under such circumstances the small atrophied uterus is flattened and pressed downward into the pelvis, while the large fibrous growth mounts up into the abdomen. It is evident that the internal examination by the sound will reveal correspondingly different signs, according as one or other of the events mentioned happens. Take next the case of an ovarian tumor. Here the circumstances are precisely analogous. The ovarian tumor, in its growth up into the abdominal cavity, either draws the fundus uteri up with it, thus necessarily lengthening the uterine cavity, or it presses the whole uterus downward, the length of the uterine cavity being in nowise altered. Again, whereas it most commonly happens that the ovarian tumor presses the uterus forward, while engaged in elongating it, the reverse may be the case, the uterus being sometimes posterior, and the pelvic part of the ovarian tumor may push the uterine fundus to one side of the pelvis, elongating its cavity at the same time. Another effect which may be produced on the uterus during the growth of an ovarian tumor, is propulsion downward of the lower segment of the uterus concurrently with dragging upward of the superior segment. This may happen when the ovarian tumor fills the pelvis and grows there, at the same time that it grows also upward into the abdomen.

And now, with the above facts before us, the value of the signs derivable from digital examination *per vaginam*, and from the use of the sound, will be more intelligible.

If there be a large tumor in the abdomen and the sound pass into the uterus for a distance of three inches or upward, and the cavity of the uterus be found more anteriorly than it should be, this will probably indicate its ovarian nature, but not certainly, for it may be a case of large fibrous tumor growing behind the uterus. The history of the case will now probably throw light on the subject. Thus, if the abdominal tumor increase quickly, it is ovarian (the reservation being again made as to presence of the rare fibro-cystic tumor of the uterus); or if the abdominal tumor be distinctly fluctuating, it is ovarian. It will be well to recollect that the sound might pass in this direction and in this manner in a case of large polypus of the uterus.

In a case which came under my notice, the vagina was drawn upward and ended in a cone just behind the os pubis; the cervix was obliterated so far as its vaginal portion was concerned, and the sound entered for upward of three inches. There was a hard unyielding tumor felt behind the vagina, extending upward into the abdomen. My first impression about this case was that it was a large fibrous growth from the posterior part of the uterus; but having examined the abdomen, and finding there a tumor which was as large as the head of an adult, the diagnosis made was that the tumor was ovarian; and this diagnosis was justified by the rapidity with which the abdominal tumor subsequently increased in size. Again, another case may be mentioned to show particularly how the diagnosis is made, and on what data it rests. The patient, *æt.* 26, had been married four years, never pregnant, abdomen greatly enlarged, suffering severely from dyspnœa; she was very weak and ill. Catamenia absent for eight months, but there had been a slight show fourteen days before. Examining *per vaginam*, the uterus was found to be small, atrophied, flattened, and pushed a little downward; its long axis lay horizontally instead of nearly vertically; above it was a tumor. Examining through the abdominal walls, there was found to be marked fluctuation below a line extending from the splenic region to the right crista ilii, tumor well defined by percussion, but not by palpation. The diagnosis was ovarian dropsy. The vaginal examination showed absence or enlargement of uterus; the abdominal showed fluctuating, distinct tumor; the results of the two methods of examination indicated clearly the diag-

nosis. These two cases are not mentioned because they presented anything remarkable in the way of difficulty—rather the reverse. Fig. 212 gives a view of the abdominal tumor in another case of ovarian dropsy, where the tumor was of considerable size. The uterus was pushed downward and backward.

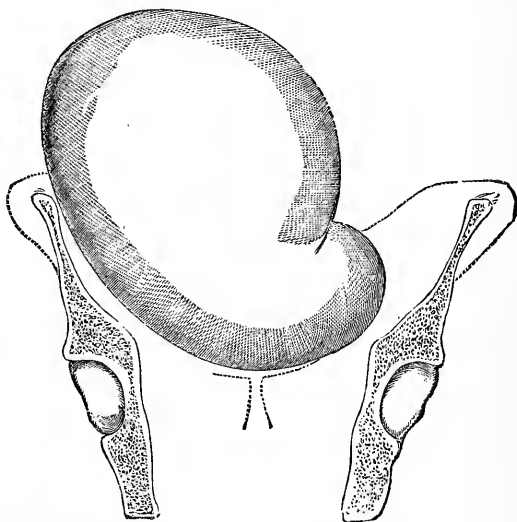
To appreciate more particularly the value of the indications given by the sound, we may divide our cases into two classes—those in which the uterine cavity is found decidedly elongated and those in which it is not. The cavity may be decidedly elongated, as above stated, from a fibrous growth of the uterus or from an ovarian tumor. In all cases it is not possible during life to diagnosticate between these two conditions, but generally the attendant circumstances enable us to do so pretty easily. In the second of the cases above related, the fluctuation of the abdominal tumor, its rate of growth, and absence of uterine enlargement, were conclusive; in the first of the cases, the rate of growth, too, was one of the points which were of importance. But we sometimes meet with cases where the uterus is lengthened, the tumor so close to the uterus as not to be separable from it; where the tumor grows slowly, and where, nevertheless, the case turns out to be ovarian. When the tumor grows rapidly, this is in favor of its ovarian nature, but the absence of this rapidity of growth does not prove the contrary. To mistake a uterine for an ovarian tumor is to commit an error of greater importance than a mistake of an opposite kind, for the reason that serious operations are undertaken when the tumor is supposed to be ovarian, which would not be contemplated if the tumor were considered uterine. The following are the most reliable distinctive signs in a case presenting difficulty:

For ovarian tumors, are, rapidity of growth, impediment of the circulation in the lower extremities, evidenced by œdema, varicose state of veins, severe constitutional disturbance—*e.g.*, great weakness and debility, emaciation, and pelvic continuous pain. These signs are in fact the signs usually present in cases of solid tumor of the ovary of cancerous nature, or in cases of cystic cancer, where the growth happens to be for a time stationary. Absence of such signs is, however, not so strongly evidence of a negative kind, for some chronic ovarian tumors give rise to very little mechanical or other disturbance. If, in a case of elongation of the uterine cavity, the sound passed quite into the

centre of a large tumor, this would almost, but not quite, conclusively indicate its character. If the sound passed laterally, or marginally as it might be termed, as regards the tumor, and the tumor were felt from the vagina to be fluctuating, this would favor the theory of its ovarian nature.

The cases in which there is no ascertainable elongation of the uterine cavity come next. Here the diagnosis between ovarian and uterine tumors is not usually attended

FIG. 212.



with so much difficulty. The tumor, if uterine, is most likely to be a large, slow-growing fibrous tumor, causing little inconvenience except from the great size to which it may attain. If the tumor were fluctuating, as ascertained by vaginal or abdominal examination, it could not in all probability, be uterine—the rare fibro-cystic tumor of the uterus being excluded from consideration; but if there were no fluctuation, considerable difficulty might be experienced in deciding whether the case was one of large fibrous or other solid tumor of the ovary, or a fibrous semi-pedunculated tumor of the uterus. There are, in fact, no signs enabling us positively to distinguish between them.

It must be recollected that sometimes the uterus becomes embedded in and surrounded by a mass of disease of ovarian origin. The composite tumors of the ovary occasionally grow in this manner. The signs afforded by the sound might, in such a case, lead to the supposition of uterine disease; the *general* symptoms would usually be of ovarian character.

There appear to be some cases in which the diagnosis is really impossible. The difficult cases are those in which a slow-growing, not large, tumor exists, which it is just as probable is ovarian as uterine. A pedunculated or even a sessile fibrous tumor of the uterus may occupy the same position, present the same physical signs, produce even the same symptoms, as a fibrous or solid tumor of the ovary. We may make a diagnosis which is an infinitely probable one, but which it is just possible *may* be wrong, viz., that the tumor is uterine because an ovarian tumor of this kind is so rare; and this is all we can do or may be able to do in such a case. If we encounter a tumor of this kind at an early period of its growth, and before there has been afforded an opportunity of knowing whether it be a slow-growing tumor or not, the diagnosis is still more difficult, for then the tumor may be a non-fluctuating specimen of ovarian cystic disease, or any one of the other varieties of ovarian disease, or it may be a uterine fibrous tumor. The nature of such cases can only be definitively diagnosticated by waiting, unless indeed we use a grooved needle and endeavor to obtain thus some notion of the nature of the contents of the tumor. When the necessity for a diagnosis of this kind arises, the tumor is generally a pelvic one, not having yet passed up into the abdomen.

Looking carefully over the records of cases where mistakes have been made in diagnosis—where ovariectomy, for instance, has been attempted, but the tumor found to be uterine—it will be seen that the element of “time” was not allowed to have its due weight in the decision arrived at prior to the commencement of the operation. Thus in one case the tumor found to be “uterine” had existed for four years; in another there was a cyst connected with the uterus of eight or nine years’ duration; in another a “large fleshy tubercle of the uterus” of “many years’” duration; in another a solid vascular tumor connected with the uterus six years. It is probable that in these cases the tumor was solid, at all events non-fluctuating, and it is likely that simi-

lar mistakes may be avoided in future, when hard tumors simulating ovarian are in the abdomen, by attention to the diagnostic value of this element of time.

The diagnosis of *fibro-cystic tumor of the uterus* is one of great difficulty, because we have here the two things combined—a solid outgrowth from the uterus which itself contains cysts. The difficulty arises from the physical resemblance this bears to a case of cystic disease of the ovaries. To estimate aright the difficulties of the question and the best method of surmounting them, careful study of the cases actually published is essential. Some of these cases are given at length in the chapter on Fibroid Tumors of the Uterus. Mr. Spencer Wells mentions two circumstances of assistance in the distinction: one is, that the color of the cyst-wall in fibro-cystic uterine tumors, when laid bare by abdominal incision, is darker than that of ovarian cysts; another, that the cysts in the former case contain a thin serum with 5, 10, or 15 per cent of blood intimately mixed with it, and not separating until after standing some hours.*

Diagnosis by Exploratory Incision.—In some cases the operation of ovariectomy is undertaken with full recognition of the fact that it *may* be found that the tumor is uterine in origin and that it may prove in consequence non-removable. After the incision into the abdomen is made, the hand is carefully passed downward by the side of or behind the tumor, whereupon the information necessary is obtained. Adhesions are not generally present so as to prevent this exploration in cases of fibroid tumor of the uterus. These exploratory operations are not generally attended with much risk.

We have here spoken of the difficulty of the diagnosis between ovarian and uterine tumors. Between these two series and *cystic enlargement of the kidneys*, a very rare disease, the diagnosis is equally difficult, and generally only made by means of exploratory operation.

DIAGNOSIS OF THE NATURE OF AN OVARIAN TUMOR.

The diagnosis having been advanced so far that we are able to pronounce the tumor to be of ovarian character, it remains to determine more precisely the nature of the tumor.

* "Diseases of the Ovaries." vol. i., p. 362.

It will be unnecessary to consider here the smaller and less important of the tumors originating in the ovaries; the remarks previously made enable us to dispense with this, and we shall now only consider the diagnosis of those which are practically important, and which may attain great magnitude, or at least produce considerable and marked enlargement of the abdomen.

The ovarian tumors now before us include:

Simple, multiple, and compound cysts.

Composite tumors, and cystic cancer.

Solid tumors.

In addition to the conditions in the foregoing list, a diagnosis of the nature of an ovarian tumor will not be complete which does not have regard to the complications liable to be observed. One of the most common of these is *ascites*; another, the existence of which is, however, more liable to be overlooked, *pregnancy*.

The diagnosis of the several ovarian tumors above mentioned, one from another, is sometimes easy, at other times extremely difficult, at other times again simply impossible, by any kind of examination we may devise, short of exploration by means of tapping, and in some cases we cannot even then obtain such a perfect knowledge as may be desirable. In the majority of cases, however, we can get as much information as is needed to enable us to decide as to the treatment. Attention is now directed simply to the determination of the *pathological* character of the tumor. There is another kind of diagnosis, a sort of mixture of diagnosis and prognosis, the consideration of which comes under the head of Treatment.

The Age of the Tumor.—If we find the tumor has been growing rapidly, and has only dated from, say, a year previously, we may pretty safely exclude from consideration the simply solid tumors of the ovary and dermoid cyst. If the tumor has been growing slowly, say three years or longer, and the subject of the case be young or, at all events, not a very old woman, this would lead us to consider the possibility of the case being one of dermoid cyst; if on examination, under such circumstances, a distinctly fluctuating tumor is ascertained to be present, this would militate against such a view of the matter; but if the tumor is found to be non-fluctuating, it may be either a case of dermoid cyst, or a case of composite tumor, or, possibly, of compound cyst of the ovary usually slow in growth. A slow-

growing, non-fluctuating, well defined, smooth tumor, which on other grounds has been determined to be "ovarian," in a woman not old, is more likely, however, to prove to be a dermoid cyst than anything else. Judging from experience, the actual diagnosis of these dermoid cysts during life and before operation is not easy, and this is partly due to the fact that this condition is sometimes met with in association with the more ordinary form of cystic disease of the ovary. Respecting the fibrous tumor of the ovary, it is to be remarked that its diagnosis from other tumors of the ovary is not so difficult as its diagnosis from uterine pedunculated fibrous tumors. Its very slow growth, hardness, and well-defined outline are the principal characteristics. "Adenoma" of the ovary, which may give rise to a solid tumor of considerable size, would be distinguished by its comparative rapidity of growth.

When we have before us a case in which the abdomen has become markedly enlarged in the course of the previous year, this enlargement being due to the ovarian tumor alone and not partially to ascitic effusion superadded, we may nearly safely leave fibroid tumors and dermoid cysts out of consideration. The further diagnosis is guided by the size, consistence, resistance, smoothness or inequality, rapidity of growth of the tumor, by the symptoms to which it gives rise, and by the general condition of the patient's health.

We may take the chief of these criteria one by one, and ascertain what information is to be procured from them as to the nature of the tumor.

The *condition of the surface of the tumor* affords necessarily more information respecting its physical character than can be obtained in other ways. Supposing we find the tumor perfectly smooth and uniform, and offering equal resistance at all parts of its superficies, whether felt from the vagina or through the abdominal walls, such a tumor is likely to be made up of one large cyst. To confirm this view of the case, we might have the additional fact that the tumor presents fluctuation from one side to the other, and from above downward. We might not get fluctuation, and nevertheless the case may be still one of simple cyst, for fluctuation cannot always be made out when the cyst is very tight. Thus the fluctuation test might or might not be available. A smooth uniform tumor, not fluctuating in the manner alluded to, might prove to be one of compound cysts of the ovary, one large cyst being the common covering for a

large number of smaller cysts within it. The fact that the tumor is large, smooth, and uniform as regards its surface, even when fluctuation is absent, is presumptive evidence that the tumor is not a composite tumor of the ovary; it is more likely to belong to the other series, though on this point there is no rule. Sometimes we find that while, generally speaking, the tumor is smooth and rounded, the hand, slightly pressed inward, encounters one or more rounded bodies *within* the larger tumor. This is a condition of things only met with when there is one large cyst, not tightly filled with fluid, and having within it other cysts; and under such circumstances we get therefore more information as to the nature of the interior of the tumor. Care must be exercised not to confound with this condition one which rather closely resembles it, viz., the combination of ascites and ovarian tumor. Such a mistake could only be the result of great carelessness, but still it might be made. An event which is quite possible is that there may be a large cyst giving the fluctuation sign at all parts of the surface, and which therefore conveys an idea that the whole tumor is made up of this cyst, whereas it may prove afterward that within this cyst is a considerable mass made up of several smaller cysts. The circumstances are sometimes such, that until a portion of the fluid in the large containing cyst is evacuated by tapping, the true nature of the case cannot be made physically evident.

On the other hand, when we find the tumor *unequal* as regards its surface, we draw inferences which may be approximately stated as follows: If the tumor present a large rounded eminence at one point, a second eminence of a like character at another, the depressions between forming divisions across which fluctuation is not transmitted, and we find the tumor to be made up of two or three such large eminences, the whole forming a tumor which possibly extends up to the umbilicus or some way beyond it, then we have probably to do with a case of multiple cyst of the ovary, or possibly there may be a tumor growing from both ovaries. Fluctuation at all parts of the surface, limited as above stated, would be evidence nearly conclusive that the case is not one of compound cysts, or one of composite tumor. Absence of such fluctuation might be due to great tightness of the cysts, or to great thickness of the walls of the cyst, to its jelly-like contents; or it might be that each of the large cysts contained other smaller ones.

To take another case: we find the tumor unequal as regards its surface, it presents a rounded eminence at one part, and fluctuation is here evident; while close to it is felt a portion of the surface harder and more resistant; at other situations the surface is perhaps still more irregular. Such a condition might be due to compound cysts, or to a composite tumor, either glandular (cystic sarcoma, alveolar degeneration) or cystic cancer of the ovary; or there might be tumor of both ovaries. Rounded nodular eminences on the surface of an otherwise smooth tumor may indicate either small cysts at the situations in question, or cancerous nodules; but we may draw one important inference from their existence, viz., that either the mass beneath these nodules is composed of solid matter of some kind or other, or that the whole tumor is a compound cystic one; the growth of small cysts *on* the surface of simple cystic tumor, or multiple cystic tumor of the ovary, is not common.

It is only in the case of rather small tumors—*e.g.*, tumors not exceeding the size of the head of an adult—that much difficulty is found in determining, approximatively at all events, the physical construction of the tumor. When the tumor is of large size, if it be a case of simple or multiple cysts, there is evident generally, at some period or other, fluctuation, and the surface is smooth and comparatively even. But in the case of a large composite tumor, or in the case of a large compound cystic tumor, there is at some situations a marked peculiarity as regards the surface, in respect to the consistence and degree of resistance of the kind above alluded to. The diagnosis of the nature of the smaller tumors requires a more particular examination. It has been already stated that a moderate-sized rounded tumor, in which fluctuation is not evident, may be either a simple cyst with very tight walls, having very dense contents, or a tumor of compound or composite nature. The tumor may be irregular on the surface or not; if irregular, this will help us in the way previously remarked, but if not, the diagnosis has to rest on other data. Under such circumstances, something is often to be made out from the general view of the case, apart from the physical characters of the tumor. Rapidity of growth, in the case of a non-fluctuating tumor, would incline us to believe it to be one of compound cysts or a composite tumor. Rapidity of growth, alone, means nothing, for we see repeatedly that large cysts, after being emptied by tapping, refill

in a very short space of time; but if we have before us a non-fluctuating tumor, the fact is of some importance in determining its construction.

Is there anything which can be learned from the *position* of the tumor, as to whether it be a purely cystic tumor, or a compound cystic tumor, or a composite tumor? Nothing absolutely. We may find a large semi-cystic tumor occupying the abdomen, and not at all engaged in the pelvis (the more common event); or we may find a part of such a tumor in the pelvis and a part in the abdomen. And if the tumor be made up of compound cysts, or if it be a composite tumor, we may find a portion of the same in the pelvis, or the whole may have passed upward into the abdomen.

We may now consider the diagnosis of that class of cases in which, having made out by previous examination that the condition present is either "compound cystic tumor" or composite tumor—it is considered desirable to pursue the analysis still further. Speaking of these cases generally, it is to be remarked that in each the growth of the tumor may be very rapid, but it is not necessarily so. In each of them there is cyst growth going on, which growth may proceed with different degrees of vigor at different parts of the tumor. The superficial part of the tumor may be therefore solid to the feel, or it may be chiefly cystic. The degree of resistance communicated to the touch is not the same in all cases, even when the tumor is identical; and during life no very precise differentiating indications can be drawn from data of this kind. The degree of hardness may not in a case of cystic cancer be very different from that in a case of compound cyst. We may often, however, learn something from the condition of the surface of the tumor. Thus hard knobs or excrescences on the surface is presumptive evidence for cystic cancer, if we find they are unlike small cysts in shape or other physical characters. Absence of such knobs is not conclusive of the non-cancerous nature of the tumor. Again, the association of ascites in these cases is of some importance. Ascites may be present in association with all kinds of ovarian tumors, but it is more frequently found when the ovarian tumor belongs to one of the series now under consideration; it is most common when the tumor is composed of cystic cancer. And hence, when the tumor presents knotty hard elevations, and there is ascites, a suspicion would arise that the tumor is of a cancerous nature.

The other points to which attention should be directed, for confirmation or otherwise of this suspicion, are of a general character. The more simple cystic disease of the ovary produces, at first certainly, but little effect on the health of the patient; but in the case of cystic cancer of the ovary, we find that although the tumor is not very large, and has possibly not existed a very great length of time, yet the health of the patient has notably given away.

Cystic cancer of the ovary has ordinarily a course differing from that of glandular tumors. The latter often grow persistently, and with such great rapidity that the whole abdomen may become, in a short space of time, distended to the utmost by a mass made up partly of cysts, partly of a sarcomatous substance. In cystic cancer the tumor is not so large.

The "compound cyst" tumor of the ovary, on the other hand, presents characters somewhat allied to those observed in more simple cystic disease; but there is great variability; and this arises from the fact that the tumor remains, sometimes, quiescent for a time, and then, perhaps suddenly, starting into active growth, produces rapidly enormous enlargement of the abdomen.

Possible Complications of Ovarian Tumor, to be considered in arriving at a Diagnosis.—When an ovarian tumor rapidly increases in size, the question should always occur, Is the enlargement due to *pregnancy*? If the tumor be of a solid character, or partly so, this is more important, but in all cases the first question which should be determined has reference to the possibility of pregnancy having supervened. Proper means must be taken, by vaginal examination, auscultation, etc., to decide this question. Experience has shown that the mistakes which have been made in undertaking operations in ignorance of the presence of pregnancy, have arisen, not from the inherent difficulties of the diagnosis, but from circumstances generally controllable.

Ascites is another complication which is rather common. It is more frequently present when the ovarian tumor is irregular in outline than when the shape is more rounded and equable, and ascites is frequently conjoined with a malignant ovarian tumor. It is sometimes necessary to get rid of the ascitic fluid by tapping, in order to explore satisfactorily the ovarian tumor.

Another important though rare complication of ovarian

tumor is gas within it. Sometimes an ovarian cyst bursts into the intestinal canal, and gas enters the cyst. Thus an ovarian tumor one day dull on percussion and fluctuating, may on another be found to have become tympanitic. The occurrence is rare.

Tapping as a Means of Diagnosis of the Nature of a presumed Ovarian Tumor.—Under some circumstances it is necessary to tap an ovarian tumor in order to release the patient from suffering; at other times this operation is undertaken as a curative measure alone, or combined with other proceedings which will be discussed in their proper place. At other times, again, tapping is had recourse to in order to throw further light on the diagnosis.

The tapping, when performed for the former of the above reasons, can be always made subservient to the further diagnosis of the nature of the tumor.

An important piece of information relates to the nature of the *contents* of the tumor. Sometimes when tapping is performed it happens that no fluid can be made to pass through the canula on withdrawal of the trochar. This may be due to great viscosity of the contents, or to the fact that in the interior of the tumor there are a multitude of small cysts, or to the circumstance that the tumor is of a solid nature. By passing a probe through the canula something more may be learned. The fluid which comes away is different in different cases, as already stated, and it does not appear that examination of the fluid affords a decided indication as to the kind of ovarian tumor. To this there is one exception in the case of the dermoid cysts of the ovary, which contain often a fluid which has this peculiarity, that on cooling it undergoes transformation into a solid mass resembling butter. Such fluid would show that we have to do with a dermoid cyst. In a case related by Dr. Alex. R. Simpson,* there was removed from an ovarian cyst of this kind a single red hair, and it was subsequently found that the cyst contained a mass of tangled hair. It was further noticed that this hair had the same color as that covering the pubes of the patient.

In cases of the more common kind, however, the nature of the fluid will not inform us as to the nature of the ovarian tumor.

* *Edin. Med. Journ.*, March, 1862, p. 886.

To distinguish between an ascitic and an ovarian fluid is important. Ascites and ovarian dropsy should be distinguished on other data than an examination of fluid procured by tapping. The microscopic and other characters of the fluid are of service in determining its origin (see p. 346). The cells and granules vary greatly in size even in the fluids from different cysts of the same ovary: the fallacies involved in a dependence on these characters for a diagnosis are, that the ovarian fluid may have burst into the abdomen, become ascitic in fact, and thus mingled with peritonitic effusion; further, lymph and pus are not uncommonly found in ovarian cysts—hence a microscopical examination of the fluid may serve to strengthen an opinion, but alone ought not to decide one. The results of tapping in cases of fibro-cystic tumor of the uterus would not materially aid the diagnosis. Tapping and examination of the fluid removed is an important means of diagnosis in cases where the tumor is possibly of *renal* origin. Urea would be searched for under such circumstances.

If, after tapping and emptying an ovarian cyst, we find the whole of the ovarian tumor gone, we may reasonably conclude that the case is one of simple ovarian cyst. Frequently it happens that immediately after tapping there is evidence of the existence of a second cyst, or of a solid mass or masses, which were not perceptible before, and of whose existence as parts of the tumor we could not otherwise have been informed; and a case which at first appears to be one of simple cystic disease may thus prove to be one of compound cystic tumor, or of composite tumor of the ovary.

If after tapping we find a tumor still remaining, this may be another cyst from the same ovary, contained within the first, or simply in juxtaposition with it; or it may be a solid tumor or mass of cysts; it may be a cystic tumor of the other ovary, or it may be a tumor of the uterus. The diagnosis of this secondary tumor should be made carefully and with due consideration of the possibility of pregnancy.

CHAPTER XLIX.

DISEASES OF THE OVARIES—(*continued*).

TREATMENT OF OVARIAN TUMORS AND DROPSY.

OVARIOTOMY.—Statistics—Present and former Statistics of the Operation—Mr. Spencer Wells's 1,000 Cases.

TAPPING as Preliminary or as Substitute for Ovariectomy—Danger of Tapping—Method of Tapping.

INDICATIONS FOR OVARIOTOMY.—Difficulties and possible Contra-indications—Decision—Method of performing the Operation of Ovariectomy—The Abdominal Incision, the Removal of the Tumor, the securing of the Pedicle—Various Methods of dealing with the Pedicle—The Clamp, the Cautey, Ligature, and Dropping of the Pedicle—Drainage after the Operation—The Antiseptic System—Precautions during and after the Operation—Various Opinions on Value of the Latter—Cleansing the Peritoneum—Sutures—After-treatment—Shock, Hæmorrhage—Septicæmia—High Temperature, Means of lowering it.

Ovariectomy during Pregnancy.

PALLIATIVE TREATMENT OF OVARIAN TUMORS.

OVARIOTOMY.

It is no longer necessary, as was the case fifteen years ago, to offer an apology for the operation of ovariectomy, to dilate on its advantages, and to combat the arguments of those opposed to it. The signal successes of the numerous operations of late years—one operator (Mr. Spencer Wells) counting his cases over one thousand—the less numerous but equally decided results of other operators, have now removed by the demonstrative method the objections which were entertained to a formidable operation; and ovariectomy is now the recognized operation for, and the recognized best method of dealing with, almost all cases of ovarian tumor and dropsy where the operation in question can be performed.

The operation of ovariectomy, first suggested by William Hunter, was first performed in America [by Ephraim McDowell, of Danville, Kentucky, in 1809, now called the Father of Ovariectomy]. It consists, as need hardly be stated, in excising the whole of the diseased ovary, an incision for this purpose being made in the abdominal parietes. At first the operation was received with disfavor, though some few operators were tolerably successful. Dr. Clay, of Manchester, first performed the operation on an extensive scale,

and his success attracted further attention to the subject. In the metropolis the operation next obtained a firm footing, mainly through the success of Mr. Spencer Wells. The results obtained by operators of late years have been increasingly more favorable than was the case a few years since. Taking the results of numerous operations of late years by the best operators, the recoveries appear to be from 80 to 85 or even 90 per cent.

Of 100 individuals, affected with progressive ovarian cystic disease, 90 may be expected to be dead within two years if nothing beyond palliative measures be adopted. The operation of ovariectomy cures the patient, a possible drawback being—that the other ovary, becoming affected subsequently, may necessitate a second operation; a second possible drawback also being that when the ovary is affected with cancerous disease, ovariectomy will not be of permanent benefit.

As regards what may be termed the *older* set of statistics of the operation, may be cited the valuable statistical account of ovariectomy published by Mr. John Clay of Birmingham, including all cases of which he had been able to obtain particulars up to the year 1860:

In 212 cases of completed ovariectomy the operation was successful.

In 212 cases of completed ovariectomy the operation was successful.
In 183 " " " " " " unsuccessful.

In 24 cases partial excision was performed: 10 recoveries and 14 deaths.

In 13 cases an operation was performed, but extra-ovarian tumors only were removed: 3 recoveries and 10 deaths.

In 82 the operation was begun, and abandoned on account of adhesions; of these, 58 recovered from the operation, and 24 died.

In 23 cases ovariectomy was attempted, but abandoned in consequence of the disease being extra-ovarian.

These statistics of Mr. Clay's included a number of operations undertaken at various times and in various places, and with very numerous drawbacks, want of knowledge as to diagnosis and treatment, etc. Taking these 395 cases of ovariectomy, it will be seen that 53 per cent were saved, and cured of a disease which would have left alive only about 10 or 15 per cent at the end of two or three years; that is to say, assuming the correctness of the calculation as to duration of life under these circumstances which were ordinarily accepted.

The last twenty years have been very fruitful in regard to the success from the operation of ovariectomy. The preceding paragraphs indicate the results up to the year 1860,

In the last edition of this work (1872) I stated that the results obtained in the preceding eleven years warranted the expectation that 70 to 80 per cent of cures might be expected when the operation was undertaken by experienced operators.

But during the last ten years the success of the operation has made great strides. The operation has passed from a possibly successful operation to an almost certainly successful one, and the mortality may be said to be now about 10 per cent or even less.

Mr. Spencer Wells has performed the operation in over 1,000 cases (up to June, 1880), with 231 deaths and 769 recoveries. Taking the several series of 100 cases, the deaths in the first 100 were 34; in the second series of 100, 28; and in the following series 23, 22, 20, 28, 24, 24, 17, 11; thus showing a very great diminution in the mortality during the last four years. Other operators have emulated the success of Mr. Spencer Wells: in England, Scotland, on the Continent, and in the United States of America, might be mentioned the names of operators who have each performed large series of ovariectomies with very great success and with a very low mortality.

The first question to be determined when the case is judged to require operative treatment, is whether the operation of tapping or ovariectomy is to be preferred.

Tapping is a palliative measure. In a few cases it has proved curative. It is adapted for cases where the tumor is composed of a simple large cyst filled with fluid. It is sometimes necessary as a preliminary procedure to ovariectomy, either to render the diagnosis more certain, or to relieve the extreme dyspnoea and embarrassment of the circulation, and thus to place the patient in a better state for the more severe operation.

In some cases patients are tapped, and no refilling of the cyst takes place for some time, for months or for even longer; but as a rule the cyst refills with rapidity, and to relieve the patient tapplings are necessary again and again, the interval becoming progressively shorter and shorter after each operation.

It was formerly thought that tapping, by setting up adhesions, rendered subsequent attempts to perform ovariectomy more difficult. Mr. Spencer Wells's statistics, adduced in a paper read at the Royal Medical and Chirurgical Society in April, 1869, do not, however, bear out this view,

for the percentage of mortality of ovariectomy after repeated tapping, compared with that of ovariectomy without tapping, was only 1 per cent greater in the former than in the latter case.

Mr. Spencer Wells* in his lectures advises tapping to be performed first in all cases of simple cyst, and he stated that he knew of many cases where the cyst never refilled after the tapping. [These were cysts of the broad ligament, and not true ovarian cysts.]

The dangers connected with tapping are—1. The possibility of puncture of a large vessel in the abdominal parietes. 2. The possibility of puncture of a vessel of the cyst itself, which might subsequently continue to pour out blood. 3. The production of septicæmia. This latter would be prevented almost certainly by antiseptic precautions. 4. The escape of irritating cyst contents into the peritoneum and production of inflammation thereby. It appears that as a matter of fact large experience does not show that these dangers are considerable, and they seem much less than they were formerly supposed to be.

The operation of tapping is usually performed through the abdominal parietes, when the object is palliative. The operation of tapping from the vagina is generally performed with other views, to be spoken of presently. In some cases ovarian cysts have been evacuated by tapping from the rectum.

Tapping was for a long time the only operation attempted in cases of ovarian dropsy. In some cases tapping is impossible, as when the tumor consists of many cysts, or when it is wholly solid: these cases do not require to be discussed. If the distension of the abdomen for which the relief is necessary has been slowly advancing, there appears no reason why tapping should be postponed; but if it be recent, it is advisable to wait longer before operating—that is to say, when the cyst is single, and there is no indication for ovariectomy.

In some instances we find it difficult to say whether the tumor be a single large cyst or not: here *other* cysts at the base of the tumor would determine us on advising ovariectomy in preference to tapping. In such cases it may be deemed better to pursue the following course: to tap the

* Lectures at the Royal College of Surgeons, 1878. *Brit. Med. Journ.*, July, 1878.

cyst and ascertain, in the manner previously pointed out, whether such secondary cysts be present or not, and, in the event of such being found, to proceed at once with the more radical operation of ovariectomy.

After all, in the majority of cases the decision will probably more and more incline in favor of ovariectomy rather than tapping, the risk of the radical operation being so little in excess of that of a measure which is only palliative.

Mode of performing the Operation of Tapping.—The readiest and, on the whole, the safest method of performing the simple operation of tapping, is to place the patient on the back, and to allow the fluid to escape through a flexible tube into a vessel placed by the side of the bed or couch. The best situation at which to make the perforation in the abdominal walls is the median line, there being thus less risk of wounding vessels. It is best to make a small incision in the skin first, in order to allow the trochar more easily to pass through the abdominal wall. The canula should have attached to it, as in Mr. Spencer Wells's instrument, a long india-rubber tube. The contents of the cyst escape on withdrawal of the trochar. Mr Wells uses a rather large trochar, the point made like a steel pen, and a blunt canula is added, so as not to injure the cyst wall opposite. It is hardly necessary to observe that the bladder should be very carefully emptied by the catheter before proceeding to the operation. If during the operation the canula become choked up, a long probe should be used to remove the obstruction. During the escape of the fluid gentle pressure may be exercised on the abdomen. After completion of the operation a wide flannel bandage should be carefully applied, the wound being previously covered over by a piece of lint soaked in collodion or carbolized oil, folded in the form of a compress. Should fainting occur during the operation, brandy or other stimulants must be given, and the cyst evacuated more slowly. Quiet after the operation is very essential, and the body should be kept as nearly as possible immovable for at least twenty-four hours after the operation, the catheter being used to evacuate the bladder.

The cyst inflammation liable to arise after tapping is accompanied with great pain, great tendency to nausea, or actual vomiting, and general symptoms of peritonitis. Warm poultices, iced drinks to allay the vomiting, are the best remedies in such cases, and small quantities of stimulants—brandy or champagne—may also be administered.

If the symptom assume a severe form, the operation of ovariectomy should be performed forthwith.

Tapping followed by Pressure.—This is a method of treating cases which at the present day it seems useless to discuss.

Tapping followed by iodine injection is also a procedure not necessary now to discuss, as it has been discontinued.

We may next consider the *indications for ovariectomy*. The average opinion among those in favor of this operation may be stated as being to the effect that when the ovarian tumor is growing fast, and when by reason of this, or in some other manner, life is threatened at no distant period, the operation is to be recommended. But it is necessary to be more explicit. If our examination convinces us that the tumor is of cystic nature, that it is growing fast, that it is made up of three or more cysts, and the general health is threatened, this seems a case for ovariectomy. Equally so if the tumor be partly cystic, partly solid, this solid matter not being cancerous. The alveolar tumor of the ovary falls under the same category, and also cases of dermoid or fat cysts “progressive” in nature. If the ovarian tumor be simply fibrous the operation is less likely to be required, but even here the tumor may excite so much irritation that an operation is a better procedure than letting the tumor alone. These solid tumors have an atmosphere of doubt about them, however, which puts them out of ordinary categories. The operation in such cases is often an “exploratory” one, the operator determining beforehand to remove the tumor if possible (see Diagnosis).

Upon the next class of cases the decision is sometimes not to be made at once. They are cases in which there is only one cyst in the ovary, or possibly two, and the disease is not strictly a progressive one; or, at all events, this quality of it has not yet declared itself. In some such cases, ovariectomy is not at all events immediately required, but there are cases in which there are good reasons for preferring to recommend ovariectomy—viz., where there is rapid formation of fluid requiring frequent tapping, and threatening life in this manner. A tendency of this kind is hardly less destructive to the patient than the tendency to the rapid formation of other cysts. The arguments for ovariectomy in cases where the “badness” of the case falls short of that just spoken of, are, that the earlier the operation is performed the safer it is, and the less risk also that the opera-

tion will be interfered with by the presence of adhesions. The difficulty experienced in deciding as to what is the best thing to be done in individual cases is one which cannot be got over by any amount of generalization on the subject, and in a doubtful case small things turn the balance.

Another class of cases in which ovariectomy might be performed is that in which, although the case is not a "favorable" one for operation, the disease is so far advanced that the patient must otherwise certainly die soon, and where the operation might possibly save life.

Mr. Spencer Wells* says on this subject: "In cases where tapping could be of little use, or has been tried, and fluid was re-formed after repeated tapplings, and all ordinary treatment has proved of no avail, then arises the question, 'Is this a case in which ovariectomy should be recommended to a patient?' the common-sense rule that I have been in the habit of following has been to say to a patient, or to the medical men with whom I am in consultation, So long as this patient is moderately comfortable, so long as she can walk a mile, or for half an hour, without inconvenience, so long as she can get up and down stairs, so long as there is no great pressure upon any of the organs of the abdomen or pelvis, and she can breathe pretty well, and her heart is not interfered with—such a patient as that may be left to ordinary palliative treatment, with the usual attention to the general health."

[Tapping is not without danger, and is now seldom resorted to. I have seen two cases of ovarian tumor of such enormous size that it was necessary to tap the patient as a preparative for radical operation. If in such cases the operation should be undertaken without preliminary tapping, the sudden removal of a large collection of fluid with the operation superadded, would be attended with more risk to life than if the fluid was removed and the operation postponed until the patient, by good nourishment and nursing, would be better able to undergo it. We were taught a short time ago, as our author has shown by quoting from Mr. Wells, that we should never perform the operation of ovariectomy until it was absolutely necessary to save the life of the patient.

These doctrines no longer prevail with the progressive men of the day. Dr. Granville Bantock, of the Samaritan

* "Lectures Royal College of Surgeons," *loc. cit.*

Hospital, in an admirable paper on the early removal of ovarian tumors, demonstrates beyond question that as a rule this is decidedly the safest method to pursue. If we operate early the patient has more strength to recover from it, and the tumor is less liable to be bound down by adhesions. A tumor without adhesions is removed with greater facility and less danger, other things being equal, than one with extensive adhesions.

If we allow the tumor to grow to a large size there is always danger of attacks of local peritonitis, resulting in adhesions.

The operation of ovariectomy is more successful now than it was a few years ago, and one reason of this is that we operate earlier, and before these accidental attacks of peritonitis have done the mischief which we always dread. My advice, then, is never to tap the patient unless the tumor is so large that it would be unsafe to do the operation and the tapping at the same time. Further than that, ovariectomy is justifiable even if the tumor does not reach half way up to the umbilicus. I am satisfied that early operations as advocated by Bantock will soon become the rule.]

Difficulties and Possible Contra-indications.—One source of difficulty arises from *adhesions*. The diagnosis of adhesions is sometimes quite impossible to make, but very extensive adhesions have not been found by any means an insuperable difficulty in the way of the performance and completion of the operation. When a portion of the tumor is in the pelvis, we may often ascertain whether adhesions are present or not, by pressing the tumor upward from the vagina, and by the mobility or otherwise of the tumor thus found to exist. Mr. Wells suggests that the tumor should first be tapped, and pressure then made from below, in order to ascertain the presence or absence of this mobility. But it is to be remarked that the shape of the lower part of the tumor might prevent its being thus moved from below, adhesions being absent. A careful examination through the abdominal walls may show that there is mobility of the tumor; this indicates absence of adhesions. Again, as pointed out by Mr. Baker Brown, the skin can be grasped and separated from the tumor if there are no adhesions. These signs, however, for the most part affect the diagnosis of adhesions *anteriorly*. The intestines are liable to contract very close adhesions with the tumor in long-standing cases, and these adhesions are posterior. Respecting ex-

istence of posterior adhesions, the results of examination are not conclusive. Practically, I am certain that the question as to the presence or absence of adhesions is one which must frequently remain unanswered until the operation is begun. Adhesions may be expected in cases where the patient has been repeatedly tapped. *Anasarca* of the lower extremities is justly regarded by Mr. Spencer Wells as not necessarily a bar to the operation, for, as he observes, it may depend solely on mechanical pressure of the tumor. I have myself seen very marked œdema of the lower extremities, from retroversion of the uterus, together with extreme distension of the bladder. When it is dependent on associated disease of the kidneys or other viscera, or on cancerous disease, œdema is undoubtedly a contra-indication. One of the worst cases of œdema of the lower extremities I have seen was one in which the tumor turned out to be cancerous. And the remarks of Mr. Wells in reference to *ascites* are equally to the point. If the ascites be mechanically produced, it is of less consequence. In the case of a small, *recent* ovarian tumor, where there is a good deal of ascites, the operation is contra-indicated, because there is a greater probability of the disease being of cancerous nature. It not frequently happens that there is much ascites and a very large tumor. In such cases, as a rule, the ascites is no obstacle whatever to the operation; in some respects it is an advantage, as adhesions are less likely to interfere.

The contra-indications which have been laid down by some operators, such as the health being very much broken down, where the drain of albuminous matter by repeated tapping has been great, the disease being of a colloid nature or otherwise materially departing from the true cystic character, where, from the habits of the patient, other organs have suffered, organically, to the serious detriment of their functions,—these restrictions are undoubtedly very much to the purpose if the success of the operation alone be considered, and they offer an important addition to the arguments in favor of “early” operation. But, as before remarked, there is a class of cases in which the operation is justifiable as a *dernier ressort*. This is a point on which it seems hardly possible to lay down laws. Each case has a law of its own, which law it is the business of the practitioner to discover. Dr. Keith of Edinburgh has recorded a case in which he performed the operation when the cyst

was actually in a state of gangrene, and with success, the patient being snatched literally from the jaws of death. Dr. Wiltshire with Dr. Watson operated on a patient dying from hæmorrhage into an ovarian cyst under equally critical circumstances; the patient survived; and Dr. Keith more recently stated that he had operated fourteen times in cases of acute suppurating or putrid cysts; with twelve recoveries.

Cases where the tumor turns out to be cancerous are of course the most unfavorable of all, not so much as regards the immediate prospect of recovery from the operation as in respect to its ultimate effect, or rather want of effect, in saving life. The age of the patient, composition of the tumor, the presence of adhesions, etc., do not appear to materially influence the result, the patient having an almost equally good chance of recovery if the operation is completed.

The decision for or against ovariectomy should be left to the patient or her friends; it is for them to take the responsibility. It is our duty, firstly, to make a diagnosis as accurate as possible, taking the whole circumstances, past and present, into consideration; secondly, to make to the best of our ability a prognosis of the case, and to lay before the patient and her friends the results arrived at.

Mr. Spencer Wells says: "The probable result of ovariectomy can be estimated with far greater accuracy by a knowledge of the general condition of the patient than by the size and condition of the tumor; and from a patient with a good sound constitution one can remove a very large tumor having very extensive adhesions, and she will probably recover; whereas, among people who have been drunkards, or in whom the constitution has otherwise been impaired, or who have a feeble heart, unhealthy kidneys, or diseased liver, the operation is much more hazardous than in a healthy person. The size of an ovarian tumor alone has not appeared to me to affect the result very much; the removal of some very large tumors has been followed by recovery, whereas death has followed the removal of much smaller ones. And a patient who is accustomed to the life of a sick-room bears an operation much better than a person taken from the ordinary pursuits of active life and at once subjected to an operation."

"The size of an ovarian tumor alone, I say, does not very much affect the result; but, if it be a very solid tumor, requiring a very large incision for its removal, the incision

extending very nearly to the sternum, then the risk is very much greater. I have found, if a tumor could be removed by an incision not exceeding five or six inches in length, the mortality is considerably less than when it necessarily extends to nine, ten, or eleven inches. Adhesions, if only to the abdominal wall, do not much affect the result; if they be low down in the pelvis, the mortality is considerably increased by them."

"Almost the only positive contra-indication to an operation, I think, would be the fact that the patient has some other disease which, if it pursued its natural course, would certainly kill her."

"With regard to the suspicion of cancer, and how far that should decide the surgeon not to remove an ovarian tumor, I think, if one were certain it was cancerous, one ought to be content with tapping, removing any peritoneal fluid that might be formed around it, and not attempting to remove it. The disease would almost certainly return. But still again I have seen some very extraordinary cases in which I have removed ovarian tumors which appeared at first sight to be ordinary multilocular tumors, and where a careful examination showed evident proofs of malignant growth, yet the patients for a long time remained in good health. In one case it was ten or eleven years before there was any return. So I think even the knowledge that a tumor was in all probability cancerous would not allow one to put operation aside altogether; but it necessarily obliges the surgeon to be very much on his guard."*

THE OPERATION OF OVARIOTOMY.

Mr. Spencer Wells's instructions as to the operation are as follows:

"The place, I need hardly say, should be as healthy a place as we can find. The patient should be lodged in the best house, in the best sanitary condition, and in the best room, that can be secured for her. The room must be so arranged that, after the operation, she can be kept perfectly quiet; it must be well ventilated, though she must be protected from any current of cold air, and at the same time not overheated.

"The bowels should be relieved, and any evident concen-

* *Brit. Med. Journ.*, June, 1878

tration of urine corrected by citrate of potash or some other simple saline. [To these precautionary hints of Mr. Wells it is proper to add that no solid food should be given on the day of the operation. It is of course essential that the operator, and all present at the operation, be free from all suspicion of *post-mortem* taint. A nail-brush should be carefully used by the operator and assistants.]

"The table on which the operation is performed should be arranged near a window, so that the light falls on the table diagonally. The patient is brought in and lies down on the table. Her feet and legs are carefully wrapped up; and she is covered by a blanket, and a strap is fastened over her knees, so that she cannot throw her limbs about. It is well also to tie the hands; and nothing is better for this purpose than an ordinary bandage, making a loop, passing it over the sleeve of the dressing-gown, and tying the hands down to the legs of the table. Each hand should be tied down. In the next place, one wants to protect the clothing. If she have simply a night-dress on, with a flannel about her shoulders, she and the bedding are completely protected by the use of a sheet of waterproof cloth with a hole in the centre, around which on the inside adhesive plaster is spread to the extent of an inch or an inch and a half. That is thrown over the patient, and adheres to the skin of the abdomen, which, I should say, ought to have been previously well cleaned. The upper part of the sheet comes up nearly to the chin of the patient. Lately I have had it made larger; and we have a simple contrivance by which the sheet can be held up in order to protect the patient's face from the carbolic spray, supposing it to be used. The patient lying thus, with the gentleman giving chloroform at her head, she is completely protected by the india-rubber cloth from the spray, which is directed from the spray-producer, and plays upon the abdomen."

Mr. Wells prefers the bichloride of methylene as an anæsthetic. Provided it is carefully given, by means of Junker's apparatus, he has never seen the slightest cause for anxiety.

"The nurses have sponges and water all ready—sponges of a certain size, thoroughly well cleansed and in sufficient number, neither too large nor too small. If they be too small they may be lost, and if they be too large they cannot be introduced. The assistants are ready. There are only two required; one stands opposite the operator to be

prepared to assist him in tying any vessel, and more particularly in preventing the coming out of intestines after the escape of the cyst from the abdominal cavity. If the assistant be not careful, as the cyst is drawn out the intestines follow, and give a great deal of trouble; but, if he carefully hold up the abdominal wall, keeping the edges of the wound together, it is impossible that any intestine can follow the cyst as it escapes. He passes the middle finger inward under the umbilicus, and the forefinger to the right and the thumb to the left of the wound, and holding the edges closely together as the tumor comes out of the abdomen.

"Then, as to the instruments. First, an ordinary scalpel—working rather with the point of the instrument than with the shoulder. Next we have a number of what are called my torsion forceps, to hold any vessel in the abdominal wall. Supposing any vessel is bleeding, it is caught in a moment, and the forceps hang down holding the vessel, so that, when the peritoneal cavity is opened, no blood drops into it. I have them plated with nickel, so that they never rust. The bleeding vessels having been stopped, the next step is to divide the peritoneum, catching hold of it previously with the forceps or by one of these little hooks. The advantage of the hooks is that one is less likely to catch a bit of cyst with it. If the cyst be lying close to the abdominal wall when you are catching up the peritoneum with the intention of dividing it, you may catch the cyst also, and sometimes divide it as well as the peritoneum. That is avoided by using this hook. One or two flat touches of the scalpel on the peritoneum are sufficient to divide it. Then a broad director is passed into the opening, and, with a blunt-pointed knife, the peritoneum is very safely divided. I rather insist upon this blunt point, because, with a sharp-pointed instrument, supposing there is a bit of intestine adhering to the abdominal wall, it may be injured, or a sharp-pointed knife might enter the bladder if it were high up. Having laid bare the cyst by the incision of the peritoneum to the extent of three or four or five inches, it then becomes necessary to empty the cyst, and this done by a trochar like that used for tapping, but of a larger size, and furnished with outer spring-hooks to fasten the cyst. It is passed into the cyst, then the point is withdrawn, and the fluid rushes through the canula into the pail below the table.

As that is done, the outer hooks are opened, the cyst is caught hold of and easily fastened to the canula, and pulled out through the opening in the abdominal wall; the fluid passes out, the cyst is held by these grasping claws, and, if the cyst be free, it of course readily and easily follows the instrument. If adhesion be noticed as the cyst comes out, it may be separated." *

The length of the incision first made is usually from the umbilicus to the pubes. In some cases this is found to be enough: the cyst can be emptied and drawn out, and no extension of the wound is required. But the incision has often to be lengthened above the umbilicus in order to allow of the moving of the tumor.

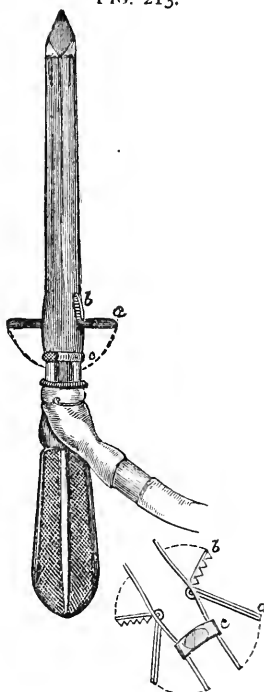
The next step is to ascertain that the continuance of the operation is possible. If the tumor is found to be solid, no further steps should be taken until, by means of the hand introduced above or by the side of the tumor, it has been ascertained that the tumor is actually removable. In some cases this may be dispensed with, the tumor being of cystic character, but even in these cases it is well to carry out this intra-abdominal exploration at this stage of the procedure. If adhesions be at once encountered, such adhesions must of course be separated in order to allow of this exploration.

The incision first made may be sufficient to allow of the extraction of the tumor without lessening the size of the mass, but generally this lessening is necessary; and the operator having ascertained that the completion of the operation is possible, and having broken down any adhesions met with in the manner to be presently described, a large trochar is thrust into the presenting cyst and its contents evacuated. A good apparatus to use for this purpose is the siphon-trochar invented by Mr. Spencer Wells. The tube is about the size of the finger. In a modification of it suggested by Dr. Murray (see Fig. 213) the canula, after being plunged into the cyst, is firmly fixed to the cyst wall. It can be easily detached again from the cyst. The trochar is withdrawn through a slit in the india-rubber tube, which slit then closes and allows the fluid to pass away through it. Another excellent form of the instrument is provided with rather blunt claws, which can be readily made to seize the edges of the perforation in the cyst. The advantage of a large tube for rapid re-

* *Loc. cit.*

moval of the fluid is great; it is also important to prevent the fluid running into the peritoneal cavity. These objects are well secured by use of the above-mentioned instruments. If the cyst contents be semi-solid or very gelatinous, this instrument cannot be employed; but ordinarily it is very useful at this stage of the operation. It may be necessary to empty more than one cyst; in this case the second may generally be perforated from the aperture in the first. If the cysts are very small and numerous, it may be necessary to break them up by passing the hand into the centre of the tumor; but before doing so we should be absolutely certain that adhesions such as to prevent completion of the operation are not present. Having thus lessened the bulk of the tumor, it is drawn out at the aperture and supported by the hands of assistants, care being taken that no dragging is allowed. It is evident that unless great care be exercised much mischief may be done at this moment. The tumor having been drawn out, the pedicle is to be secured. Before alluding to this part of the operation we must consider the question of adhesions. On exposing the tumor we may find that it is adherent; and it may be adherent to the bladder in front or laterally, to the intestines, or everywhere. The most difficult adhesions to surmount are those between the tumor and the bladder, or the intestines, or omentum, but adhesions in other situations are generally not real obstacles. These adhesions are not to be separated by the knife: they are to be carefully broken down by the fingers or by the handle of the scalpel. An "adhesion clam" has been invented by Mr. John Clay for this particular purpose.* The actual cautery

FIG. 213.



* See *Med. Times and Gaz.*, vol. ii., 1862.

is exceedingly safe and useful in separating thick and strong adhesions. The bleeding from vessels in these adhesions requires to be carefully looked to. The torsion or pressure forceps used by Mr. Spencer Wells are most valuable instruments for dealing with hæmorrhage at all stages of the operation. They are made of various forms and sizes, so that, no matter where the bleeding point is, it can be seized and held by the spring action of the forceps without further attention being for the moment required. At a later stage of the operation fine silk ligatures are employed where found to be required. Great care is necessary, when the intestines are adherent, to avoid perforating them: in very long-standing cases the difficulty of avoiding such perforation is or may be very great. When the cyst cannot be separated from the intestines, Mr. Spencer Wells advises that a piece of the cyst be cut off and left attached, the lining membrane of the cyst being also removed.

When the tumor is quite clear of all adhesions, and the necessary diminution of its bulk effected, the pedicle is to be secured. In order to perform this part of the operation satisfactorily, the tumor must be properly sustained by assistants. In most cases it is better to apply a temporary ligature and cut away the bulk of the tumor, in order that the pedicle may be more conveniently dealt with.

Treatment of the Pedicle.—During the last three or four years the method of securing the pedicle which has been most largely employed is one used some time ago, by Dr. Tyler Smith, of tying it with silk ligatures, two or more, according to circumstances, cutting these off short and leaving the stump to take care of itself; and it appears probable that this method will come to be almost universally employed.

The Clamp.—Mr. Jonathan Hutchinson introduced the use of a clamp (see Fig. 214), by which the pedicle is constricted, brought out to the level of the abdominal wound, and there maintained in a fixed position, the wound being then closed around the stump of the pedicle. The double object of preventing hæmorrhage and keeping the stump of the pedicle at the surface of the wound is thus secured.

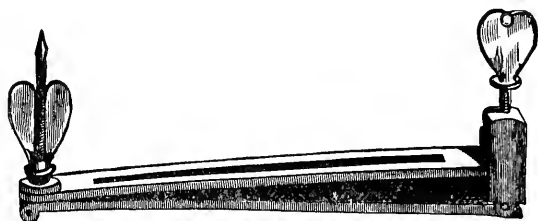
Mr. Spencer Wells's clamp is composed of two slightly curved blades meeting somewhat like scissors, and acting in such a way that the pedicle, if broad, is compressed into a rounded shape and its bulk thus reduced. This clamp

and another one which had been previously largely used, and of which it is a modification, is provided with long handles enabling the operator to use great compressing force. The handles are capable of removal when the pedicle has been secured.

Mr. Wells for some years used the clamp almost exclusively, but now employs silk ligature.

Application of the Actual Cautery.—To Mr. John Clay of Birmingham is due the merit of first applying the actual cautery in cases of ovariectomy, but he used it for the purpose of destroying adhesions only. Mr. Baker Brown first employed it for cutting and closing the pedicle. In this procedure the pedicle is enclosed between the two blades of a clamp of peculiar shape; these are then screwed very

FIG. 214.



tightly together, and a wedge-shaped cautery-iron at a moderate red heat applied so as to cut through the pedicle. The parts are cut through slowly and deliberately, the clamp is then unscrewed, and the stump allowed to drop into the pelvis. In some cases the vessels are not completely closed, and after taking off the clamp it is found that there is some escape, necessitating the application of ligatures. The cautery-clamp has a twofold action: it compresses and crushes the pedicle for a thickness of a quarter or a third of an inch, and it sears the surface. And it must be employed in such a manner that these objects are well attained.

The cautery has been extensively employed of late years, Dr. Keith having performed many very successful operations with its aid.

Of other methods of securing the pedicle the old method of tying it and bringing the ligature ends outside has been entirely given up. The method of fixing the pedicle by stitches to the edge of the wound is now only adopted in

cases of incomplete operations, where, for instance, a cyst has been emptied but cannot be removed.

The Silk Ligature and Pedicle dropped.—Dr. Tyler Smith was, I believe, the first to employ the method of applying a ligature and dropping the pedicle, but other operators did not at that time follow up this procedure. Recently, however, as already stated, the silk ligature has been extensively employed. Speaking on the subject,* Mr. K. Thornton states that after this operation he has observed five conditions—(1) Union of opposite sides of the ligature; (2) vascularization of lymph over the ligature; (3) adhesion of stump to adjacent parts; (4) fatal hæmorrhage due to escape of one or more of the large veins at the outer edge of the pedicle from the external loop of the ligature; (5) the ligature uncovered round the pedicle when diffuse peritonitis and effusion of serum had occurred.

The material employed is generally pure Chinese silk, sufficiently thick to admit of being tied firmly, but not too thick, and properly carbolized. When the pedicle is not large, two ligatures are sufficient, and for this purpose a needle, which Mr. Wells prefers to be blunt pointed, is passed through the stump, armed with a double ligature. Each half is then tied separately, and the whole stump then surrounded by a third ligature. When the pedicle is thick or wide it requires to be tied in more than two detachments. The ligatures should be made to lock in each other. A further precaution is necessary, viz., that too much should not be enclosed in any one ligature, otherwise it is liable to slip through afterward; this latter accident is more particularly liable to happen at the outer border of the stump. Dr. Bantock suggests that a small outer ligature should be applied at the edge of the pedicle so as to get a groove for more certain fixing of the outer ligature.

It is desirable to exercise great care in the adjustment of the ligatures on the stump, to be quite sure that each ligature does its work, and that it has not too much to do. This must be ascertained after the stump is dropped, and it must be certain that no escape of blood occurs. The ends of the silk ligatures are finally cut off.

The dropping of the pedicle appears to answer extremely well, and as the abdominal wound is completely closed afterward there is less risk of septic action than when the

* *Brit. Med. Journ.*, Jan., 1878.

clamp is used. The cantery plan has the same later advantage also, but it is less certain than the ligature in regard to its preventing hæmorrhage afterward.

Drainage in Ovariectomy.—A few years ago much attention was paid to the subject of drainage, and cases were published by Dr. Marion-Sims and others in which it had been found serviceable to remove septic products formed in the peritoneal cavity after ovariectomy by drainage. Dr. Marion-Sims has all along insisted on the extreme importance of complete and continued evacuation of septic material from the peritoneal cavity after ovariectomy. Drainage was performed in two ways, by the vagina or by the abdominal opening. The drainage by the abdominal opening, as carried out by Dr. Keith of Edinburgh, consisted in introducing glass tubes perforated at the extremity and opening between the lips of the abdominal wound.

Dr. Bantock and Mr. Thornton have also practiced drainage after the method of Keith. But since the introduction of the antiseptic method of operating, the drainage plan seems to have been almost entirely relinquished. It has not been found necessary, either because the ligatured and dropped pedicle is less likely to occasion septic irritation or because of the influence of the antiseptic spray. And it is disputed as to which is the real cause of the diminution in the septic disturbance which has followed more recent operations.

[The subject of drainage after ovariectomy was brought up incidentally in a discussion in the Surgical Section of the International Medical Congress, in London, in 1881, when Dr. J. Marion-Sims expressed his views as follows:

“I do not share the fears expressed by some on the subject of drainage.

“In abdominal surgery we have a large and active absorbing surface. Some patients will survive the absorption and elimination of a large amount of septic serous fluid, while others will succumb rapidly to the absorption of a small quantity.

“There is no special danger in introducing a glass tube into the peritoneal cavity through the lower angle of the abdominal incision; for nature protects the peritoneum by sacculating the tube completely by the exudation of lymph which immediately becomes organized. If there is no bloody serum to drain off, the tube may be removed in a few hours and no harm is done. But if there is something to be

drained it soon makes its appearance at the open end of the tube, and is readily absorbed by sponges placed to receive it.

"Mr. Spencer Wells and Mr. Thornton no longer use drainage tubes in abdominal surgery. But I think they may occasionally find cases in which it might be useful.

"The tube is now excluded on the theory that Listerism renders the peritoneal effusion aseptic, and therefore that its absorption will not be attended with risk to life.

"But is this always so? I fear not—and let me illustrate this uncertainty by a case, one that is by no means unique.

"In December, 1878, I assisted Mr. Spencer Wells with an ovariectomy, in one of the suburbs of London. The case was altogether a very bad one. Knowing well its difficulties and dangers, he put off the operation till at last it was obliged to be done to save the life of the patient.

"Adhesions in the bottom of the pelvis were universal and strong. When the external wound was closed, Mr. Wells saw that there was some bloody exudation going on, but supposing that Listerism had rendered this aseptic he had no fears for the result.

"The patient went on well enough for thirty-six hours, but after that fears were felt for her safety. Fortunately at this period of anxiety bloody serum was found exuding from the lower angle of the wound, and Mr. Spencer Wells removed the two lower sutures, and opened the wound sufficiently for the free discharge of the septic bloody serum, and the patient made a rapid recovery.

"Now I do not pretend to say that the patient would necessarily have died if the accidental discharge had not so positively pointed out the method of immediate relief to urgent symptoms; all this poisonous fluid might possibly have been absorbed and eliminated, but was there not great danger in waiting for nature's effort in this direction?

"But of this I am sure. If the drainage tube had been used, this fluid would have been drained off, as it was extravasated, and there would not have been the least cause for alarm for the safety of the patient.

"The only objection that can be urged against the drainage tube is, not in any immediate danger, but in its ultimately predisposing to the production of ventral hernia. And this is a serious objection, one that we who advocate its use must learn to obviate. Some one must work out this problem, and I am sure that it can and will be done."

Keith occasionally uses the drainage tube, Bantock does frequently, Lawson Tait has lately adopted it. He opposed its use till he lost a patient that might have been saved by drainage.] (See Appendix F.)

The Antiseptic Method of performing Ovariectomy.—The “Listerian” precautions for performing operations have been applied to ovariectomy during the last four or five years by some of the most celebrated operators—Mr. Spencer Wells, Dr. Thomas Keith, Mr. Thornton, and others in this country. It has also been largely employed on the Continent, particularly by Nussbaum of Munich.

Dr. Keith, writing in 1878,* said that since 1876 he had performed all his operations under the “spray.” His last 41 cases (under spray) had all been successful. The advantages were—(1) that the mortality was lessened; (2) that early operations could be more safely recommended; (3) drainage less required; (4) convalescence easier; (5) antiseptics a great comfort to the operator. Writing more recently on the subject, however, Dr. Keith appears to have altered his views in a material degree. Mr. Spencer Wells, in his paper recording results of 1,000 operations† up to June, 1880, says that before 1878 he had taken all other possible precautions, but in that year he adopted the antiseptic plan. Previously, in no series of 100 cases had mortality fallen below 17 per cent, but in the last series of 100, all done antiseptically, the mortality fell to 11 per cent. His total number of antiseptic cases up to that time was 134 with 13 deaths, or a mortality of 9·7 per cent. He says, further, that soon after adopting antiseptic precautions he began to adopt the intra-peritoneal method of treating the pedicle; but he says, further, that before he had made this latter change he had noticed that the antiseptic plan made a great difference in his mortality. With it he finds drainage scarcely ever necessary.

Mr. Knowsley Thornton‡ is a strong advocate of Listerian ovariectomy. He considers that he has reduced his mortality by 9·35 per cent. On the other hand Mr. Lawson Tait and Dr. Bantock express themselves as not satisfied with the good effects of the “spray” in this operation. Mr. Tait§ considers that the introduction of the intra-peritoneal

* *Brit. Med. Journ.*, Oct., 1878.

† “*Med.-Chir. Trans.*,” vol. lxiv.

‡ *Ibid.*, vol. lxiv., p. 139.

§ *Ibid.*, vol. lxii., p. 161.

method is to be credited with the lowered mortality of ovariectomy, though he is not prepared to say that the antiseptic system is absolutely without results. Dr. Bantock* contends that the carbolic spray as ordinarily used is responsible for high temperature afterward. He has gradually reduced the strength of the spray to 1 in 150, and even lower, and finds still good results. He considers also that it acts as a poison in some cases.†

The employment of the carbolic spray throughout a long operation, such as ovariectomy occasionally is necessarily found to be, appears undoubtedly liable to prove detrimental. But, supposing this to be the case, the carbolic spray may still make shorter operations more safe. Further, the use of carbolic spray is only one of the antiseptic precautions which the Listerian system includes: the carbolization of instruments, sponges, and apparatus generally, must add very much to the safety of the operation, even supposing the carbolic spray not to be employed.

When the tumor is removed and the pedicle secured, the next procedure is to thoroughly cleanse the peritoneum by carefully sponging it and removing any blood or fluid which is found. In some cases this is not necessary when the tumor has been removed without laceration or escape of blood or fluid into the peritoneum. Any bleeding points have to be secured by ligatures; any torn adhesions giving rise to escape of blood must be looked to. This "toilet" of the peritoneum, as it has been aptly termed, is most important. Sponges employed in this final cleansing process should be clean ones.

The sutures for the purpose of securing the edges of the wound are next introduced. They are usually of strong silk. They are introduced from within, just securing the edge of the cut peritoneum and securing coaptation of the two peritoneal edges. It is a good plan to place a large flat sponge under the wound, while the needles carrying the sutures are put in. Each suture should have two needles. When the whole are inserted the sponge is removed and the sutures tied. Before fastening the wound Mr. Wells is particular to insist on the sponges being carefully counted to see that none are left behind. When pressure forceps are employed, these also should be counted.

* "Med.-Chir. Trans.," vol. xlv., p. 103.

† See discussion on this subject, *Lancet*, Dec. 18, 1880.

Before closing the wound it is necessary to examine the other ovary and to ascertain whether it be sound. If there be a decided cystic tumor of the other ovary, and of such a character as to render it probable that it would, if left, grow and necessitate a further operation, it should be removed; but it may be questioned whether it is advisable to meddle with it under any other circumstances. It must not be forgotten that the *normal* Graafian follicle when near the time for bursting is of considerable size. The removal of the second ovary would be effected in precisely the same manner as the first, but more easily and expeditiously.

When the sutures are secured the skin must be cleansed and dried, and a piece of cotton-wool laid over the sutures. Adhesive plaster is then applied over all, so as to help to sustain the edges of the wound in apposition. Finally a roller with more cotton-wool may be applied, the patient thoroughly dried, and placed in bed with hot-water bottles to the feet.

The *after treatment* is a matter of the greatest consequence, for it matters little how well the operation may have been performed if there is allowed the slightest defection in the care administered subsequently. A very little neglect will nullify the most promising hopes.

The patient must be sedulously watched by a specially trustworthy and competent nurse; she must not be allowed to move. The room must be kept moderately warm, and at an *even* temperature, but well ventilated. The catheter must be employed twice or thrice in twenty-four hours.

When the intra-peritoneal plan of securing the pedicle is adopted, the wound requires no attention for two days or more. It is sufficient to see that there is no escape or formation of matter. The spray may be used in dealing with the wound afterward. It should be carefully treated with antiseptic precautions in dressing, if there be any delay in the healing of the wound. Dry cotton-wool is an admirable means of preventing contact with air and is highly antiseptic. The sutures may be left for five or six days as a rule. On their removal strapping should be carefully applied.

As regards food, it is best to avoid giving food by the mouth at first, to give only a little ice to suck occasionally, but to give nutrient injections every six hours, commencing to feed the patient in the ordinary way, at first by milk or beef-tea. After the second or third day, according to cir-

circumstances, small quantities of stimulants may be given if the pulse is weak and quick. Twenty drops of laudanum should be added to the injection night and morning for the first three days.

The bowels should be unloaded by a simple enema of warm water on the fifth day.

It not unfrequently happens that the state of the patient just after the operation is one of great exhaustion; or shortly afterward vomiting, very difficult to control, may set in. As regards the exhaustion, it is to be overcome by giving a sufficient quantity of brandy and water or brandy and beef-tea by the rectum, which, if it appear necessary, may be repeated at frequent intervals subsequently. Ice by the mouth is best for the sickness. Repeated deep inspirations help to get rid of the chloroform or other anæsthetic, and thus tend to allay the vomiting immediately following the operation.

Death after ovariectomy results mainly from shock, from hæmorrhage, or from septicæmia. A weak heart, diseased lungs, or other general ailment, may be the main fundamental cause.

We have to avert the tendency to death, whatever that may be. For *shock*, restoratives—ammonia, brandy, champagne, opium, may, one or all of them, be employed. For *hæmorrhage*, which may occur internally and will be recognized by the feebleness and frequency of the pulse, together with a progressive faintness, the only efficient remedy is of course to arrest it. It may be necessary to reopen the wound and secure the bleeding vessel if there be good reason for suspecting that bleeding is going on. A troublesome form of hæmorrhage is that which arises from a large surface of torn adhesions. Application of perchloride of iron appears to be the best remedy in some of such cases. A limited bleeding area would be best treated by the actual cautery.

For *septicæmia*, which may be used as a general term for peritonitis, for tendency to puriform formations, for tympanitis, and other grave symptoms, we must be constantly on the watch from the first moment. In one or other of its forms it is the most frequent form in which death occurs. The patient is in danger the moment the pulse rises to 120, together with elevation of temperature to 101° or over that, though the degree of danger varies according to other circumstances. The condition of the pulse and temperature

taken together offer more trustworthy indications as to the patient's state.

The elevation of temperature is now always most carefully watched and cared for. In several cases where the temperature was very high it has been reduced by the application of the ice cap to the head, and three or four years ago great attention was paid to this procedure, and a special apparatus devised consisting of a spiral tube in the shape of a cap, through which iced water was made to flow continuously (Thornton). Another method adopted was to cover the patient with a sheet wetted with iced water. It appears, however, that of late there has been less necessity for the ice cap, owing to the greater success in preventing septicæmia.

Warmth to the abdomen, poultices, turpentine stupes, etc., are requisite when any local pain or irritation is present. When, however, there is decided elevation of temperature, it is so frequently found that it is due to a septic process in the peritoneal cavity that search is made, by vaginal examination or otherwise, for evidence of existence of puriform swellings or collections, and several lives have been saved by opening or allowing the escape of the contents of such collections.

Careful administration of diffusible stimulants, ether, champagne, together with injections of natural character, are required when strength is failing from septicæmia or otherwise.

Tympanitis—generally coexistent with peritonitis—is a troublesome complication. A long O'Byrne's rectal tube is useful under these circumstances. A case is recorded where the best effects resulted from inverting the patient to relieve great tympanitis.

Diarrhœa is dangerous: it must be checked by using first a warm-water injection to empty the rectum, and then giving by injection laudanum, in small frequent doses, along with the brandy and water probably also required.

Life frequently hangs on a thread in the few days following ovariectomy, but experience has shown that very apparently hopeless cases recover by careful nursing, assiduous feeding as above directed, and unhesitating administration of champagne or other stimulants in very frequent small doses.

For some days the patient must lie absolutely on the back. Bed sores must be prevented by use of water cush-

ions; the greatest cleanliness, but especially dryness, of the linen and surface of the body enforced.

Exploratory Operations.—Of late years the operation of opening the abdomen in order to ascertain whether it is possible to perform a further operation has come to be recognized as a proper procedure in certain cases. It is remarkable that so little harm seems to be done by this operation when accompanied by antiseptic precautions.

Ovariectomy during Pregnancy.—The operation has of late years been performed during pregnancy in some few cases. Mr. Spencer Wells in 1877 * reported nine cases with eight recoveries, and in five the child was born at natural term. There were three operations in the third month, three in the fourth, one in the sixth, and two in the seventh month. Dr. Playfair has collected thirteen cases of results of ovarian disease and pregnancy, and of the thirteen as many as seven were fatal at the end of pregnancy. Dr. Galabin† reports a case of ovariectomy in the sixth month, with favorable result and delivery at full time. He says that in most, if not in all, cases reported of operation after the fourth or fifth month premature labor followed sooner or later. Mr. Wells prefers to operate early rather than late in pregnancy. It does not seem possible to lay down an exact law as to operating during pregnancy. But it is manifest that if the patient be in a suffering condition ovariectomy is called for, even though at the risk of inducing premature labor later on. The probability is that the decision will be more and more in favor of operating.

Palliative Treatment of Ovarian Tumors.—Past experience does not give encouragement for the belief that much benefit is derived in cases of *ovarian dropsy* from any particular remedies. Iodine, bromine, and their compounds, are agents which have been most often exhibited of late years. Iodine has been applied externally also. It has not been shown that any great amount of benefit has been derived from their use, but in the early stage of the affection it would be desirable to give them a trial. It is extremely doubtful whether we have any one drug from which much can be expected; but it does seem reasonable to suppose, and it is in accordance with experience, that by attending to the general health of the patient, enforcing observance

* *Obst. Soc. of London*, July, 1877.

† *Brit. Med. Journ.*, March 13, 1880.

of rules as regards diet, exercise, and regimen generally, a favorable influence may be exerted, and possibly the onward progress of the case stayed; the more so if we found, on inquiry, that the general health had been, for some time previous to the appearance of the disease, in a defective state. Whether operative measures be adopted ultimately or not, we should in the meanwhile inquire minutely into the particulars of the life of the patient, her habits, food, etc. Such remedies should be administered as will assist in restoring the impaired health. Iron, quinine, or other suitable tonics, will frequently be required. The condition of the bowels must be regulated, and mild laxatives administered if necessary; injections are often required in cases where there is a pelvic ovarian tumor, the tumor sometimes pressing on the rectum and preventing defæcation. In cases where the disease is far advanced, where operative measures are, from whatever cause, inadmissible, the palliative treatment must be adapted to the circumstances of the case. The great difficulty is generally to carry on the digestive process, there being often great irritability of the stomach and inability to take food. The food administered must be of the most nutritious and easily digestible kind.

CHAPTER L.

DISEASES OF THE PERINEUM AND VULVA.

EXAMINATION OF THE EXTERNAL GENERATIVE ORGANS.—Diagnosis of Ulcerations of the Vulva of Various Kinds—Adhesions of Labia; Treatment—Elephantiasis of Vulva—Hypertrophy of Labia and Nymphæ—Anasarca of Labia or Nymphæ—Hypertrophy of the Clitoris—Condylomata, Warty Excrescences of the Vulva; Removal—Lupus of the Vulva—Cancer of External Generative Organs; Treatment—Abscess of Labia and Boils—Blood-tumor of the Vulva—Fibrous, Fatty, and Encysted Tumors of the Vulva; Treatment—Hernia of the Labia and Ovary—Various Forms of Inflammation of the Vulva; Treatment—Vulvitis in Children—Pruritus of the Vulva; Treatment.

Method of Examination.—For ordinary purposes the position on the side answers very well; in others, the position on the back is best.

DIAGNOSIS OF ULCERATIONS OF THE EXTERNAL GENITALS.

In reference to the diagnosis between ulcerations of syphilitic, cancerous, lupoid, or other nature, it may be remarked, *in limine*, that it is safer in doubtful cases to depend rather on the deductions to be drawn from attentive consideration of the history and general symptoms of the patient, than on the appearances presented by the ulcerated surface itself, these appearances, *per se*, being likely to lead to the formation of erroneous conclusions.

Ulcerations due to *syphilis* are distinguished from those due to *lupus* by the following characters: In syphilis, although the ulcers may be like those of lupus superficially, there is an absence of induration of the cellular tissue beneath. The coppery hue of syphilis is wanting in lupus. The history and course of the two affections, the absence of syphilitic affections in other parts of the body, in cases where the disease of the vulva has lasted for some time, would be against syphilis. Syphilitic ulcers have a predilection for the internal or mucous surface of the vulva, and especially the labia minora. In the case of lupus of more severe form, where there is a considerable destruction of the tissues of the part, there might be a possibility of confounding it with the phagedænic form of syphilis. Here the distinction would rest on the rapid course of the syphilitic, the chronic course of the lupoid, disease; added to which the previous history of the case would throw much light on the subject.

Ulcerations due to *cancerous* disease of the vulva have the characters ordinarily possessed by cancerous ulcers elsewhere. The hard, jagged, everted borders, the hardening of the tissue beneath, greater than in the case of lupus, the occasional bleeding, lancinating pain, and progressive character of the disease—these are the chief distinctive features. There is less disturbance constitutionally in the case of cancer of the vulva than in cancer of other parts, inasmuch as cancer of the vulva is usually of the epithelial variety. Syphilitic ulceration, as a rule, could hardly be confounded with cancerous; the course of the affections is essentially different; the cancerous disease is limited to one spot, and there is, as in the case of lupus, absence of syphilitic disease in other parts of the body. The diagnosis of syphilitic ulcer is not always so easy. Dr. West has observed some cases of chronic ulceration of the mucous surface of the

vulva, which he believes to have been forms of tertiary syphilis, but which proved so difficult to cure as to raise the question as to their malignant nature.* The ulcers in question were on the mucous surface of the vulva, for which they exhibited a preference. In lupus, there is more induration around and in the base of the ulcer, and the orifice is often contracted; whereas, in Dr. West's cases of supposed syphilitic origin these characters were wanting.

Simple ulcerations are usually distinguished from syphilitic ones by the absence of inflammation around the ulcers in the syphilitic cases.

Twice I have observed a patch of ulceration, the size of a shilling, on the surface of the labia, in a young woman the subject of scrofula. This form of ulceration might be termed *scrofulous ulcer of the labium*. The edges were pretty well defined, there was little inflammation around, and not much pain. On both occasions the ulcer appeared simultaneously with great constitutional disturbance, and disappeared when, after removal to the country, the patient had become in other respects better.

ADHESION OF THE LABIA MAJORA.

The labia majora are sometimes found adherent in the middle line, there being only a small opening above—the urethral orifice. Cases of this kind are chiefly met with in infants or young children.

Such adhesion is sometimes met with, but in a partial degree only, after adult age has been reached. The closure here alluded to is very different from that situated higher up within the vagina, where the hymen is in question; in the latter case, the obstructive membrane is not visible until the labia have been separated. Here the labial obstruction is quite on the surface, the perineal raphé extending forward much further than usual, and all that is seen of the vagina is a little recess just beneath the urethral aperture.

The *treatment* required is as follows: The ivory handle of a scalpel is dipped in oil, the extremity of the handle inserted just below the urethral orifice, and the separation effected by pressing the edge of the handle outward against the obstruction, which usually readily gives way. A piece

* "On Diseases of Women," p. 651.

of oiled lint may be introduced between the separated labia, and there left for a day or two. This operation should be performed during the first year of life. Incision may possibly be necessary in those rare instances in which the agglutination persists until after puberty.

ELEPHANTIASIS OF THE VULVA

is a peculiar hypertrophy of the skin of the part. The disease is very rare; the size of the tumor thus formed may be very considerable, as in the case depicted in the French edition of Scanzoni's work on "Diseases of Women," where the labia, enormously increased in size, extended down as far as the knees. The disease is said to be epidemic in Barbadoes. It is not often witnessed in temperate zones. (Scanzoni.)

HYPERTROPHY OF THE LABIA AND NYMPHÆ

is not so rarely witnessed. The increase in size is generally due, when the labia majora are affected, to large quantities of fat. Whether due to fat or to fibro-cellular tissue, the enlargement is smooth and uniform, thus differing from elephantiasis and from other forms of enlargement of the labia. The hypertrophy may affect the labia majora or the labia minora exclusively. A remarkable case of hypertrophy of the nymphæ has been described by Breslau, in which the tumor and the dragging of the enlarged organs on the lips of the urethral orifice produced incontinence of urine.

In a few cases when the bulk of the organ interferes with locomotion, or gives rise to other discomforts, the hypertrophied parts should be excised.

ANASARCA OF THE LABIA MAJORA OR NYMPHÆ.

In these cases there is an effusion of fluid into the cellular tissue of the labia majora, or nymphæ, or both, and it usually affects both sides; the distension is uniform, not painful; it is consequent on obstruction to the abdominal circulation, as in the course of pregnancy, general organic disease of the heart, liver, kidneys, etc.

The distinguishing characteristics of the swelling due to this cause are that the swelling is uniform, smooth, pitting on pressure, and painless, at all events at first. Subse-

quently there is often much pain, due to excoriation of the surface.

The *treatment* consists in observance of rest in the horizontal position, and emollient applications, such as poppy fomentations, or an evaporating lotion, composed of a mixture of spirit and water. Such applications afford great relief, and are usually sufficient. When the swelling is extreme, troublesome excoriations, produced by the opposed surfaces rubbing one against the other, may be witnessed. In such cases, lint dipped in the lotion must be applied between the parts affected, so as to prevent friction.

HYPERTROPHY OF THE CLITORIS

is now and then met with as a consequence of eczema of the skin in the neighborhood, or of a chronic inflammatory condition of the surrounding parts, or of syphilis, or without evident cause. It is occasionally congenital. The clitoris is also liable to become the seat of cancerous growth.

Cases are on record in which the clitoris has attained an enormous size, so much so as to render walking and moving about inconvenient. The identity of the tumor with the clitoris will be ascertained by carefully examining its attachment superiorly.*

In cases of self-abuse the clitoris may become, but not necessarily so, hardened and hypertrophied.

Treatment.—When the clitoris is hypertrophied, its removal may be necessary, on account of the mechanical inconvenience it produces. The removal of the clitoris for the purpose of curing self-abuse has not proved satisfactory in cases where it has been practiced.

CONDYLOMATA, WARTY EXCRESCENCES, ETC.

Various forms of excrescences of the external generative organs are noticed. *Condylomata* are warty growths, often of considerable size—flat, smooth elevations, growing irregularly round the orifice of the vulva, and occasionally in such profusion as to almost block up the entrance. They are observed in cases of syphilis of the female gener-

* Several cases of enlargement of the clitoris will be found described in Dr. Churchill's valuable treatise on "Diseases of Women."

ative organs. There is generally in such cases a profuse offensive discharge; and, on inquiry, the syphilitic source of the growths in question is made evident. Warts of non-syphilitic character, and resembling those seen in other parts of the body, may be found growing on some part of the vulvar surface. The diagnosis of the syphilitic from the non-syphilitic cases is not usually a matter of any difficulty. The further consideration of this subject falls scarcely within the province of this work.

Treatment.—Where the condylomata are large and numerous, the preferable treatment is to use the knife for their removal, the patient being previously placed under the influence of an anæsthetic. Strong nitric acid or lunar caustic may be used in other cases. [Chromic acid is an excellent application.] The black wash, or a strong solution of iodide of potassium, should be subsequently applied freely; anti-syphilitic remedies are to be given internally. The smaller warts may be cut off with scissors.

LUPUS OF THE VULVA.

The chief characteristics of this disease—not a very common one—are, thinning of the skin, hypertrophy and knotty condition of the cellular tissue beneath, formation of indurations and enlargements, ulcerations and contractions. The disease is chronic, and is not usually painful. The ulcers form slowly, and the surface heals in one place while it is ulcerating in another. The contractions left on healing of the ulcers are very considerable. The disease differs from cancer, but exhibits a very close resemblance to lupus of the face. It may prove fatal by exhaustion, or by peritonitis consequent on formation of fistulæ. The disease was first accurately described by Huguier, who divides the cases of this disease into three categories—the superficial, the perforating, and the hypertrophic forms.* Dr. West, whose description of lupus is most complete, has himself observed five cases.†

The disease was observed in only one of these cases before the age of twenty; it was observed most frequently between the ages of twenty and thirty-five. Its duration may be

* Huguier's important memoir will be found in the *Mémoires de l'Acad. de Méd.*, 1849.

† *Op. cit.*, p. 653.

gathered from Dr. West's statement, that in the fourteen cases observed by Huguier and himself, some cases admitted of a cure after more than three years, and of great relief even after eight years. One case had lasted between ten and eleven years. The disease kills, when fatal, by producing peritonitis, fistulæ, contraction of the bowel, and not, as cancer does, by attacking some distant organ, or by involving all the tissues in one common morbid change. (West.) Two cases of this rare affection are recorded and delineated in Dr. M'Clintock's work.

Treatment.—It appears that complete recovery from lupus of the vulva is rare, though the disease is susceptible of much alleviation by treatment. Long courses of small doses of mercury and iodide of potassium would seem, from Dr. West's experience, to be most efficacious. Scanzoni recommends the local and internal use of iodine. Huguier and West both insist on the extreme advisability of removing the nymphæ or any of the adjacent parts readily admitting of extirpation, when the ulcerations upon them appear indisposed to heal. Dr. West also urges the removal of the excrescence apt to form in such cases as preparatory to other measures; and he considers the actual cautery preferable to any kind of chemical escharotic, as a means of healing the ulcerations produced by the disease. Professor E. Martin* of Berlin records a case in which he applied fuming nitric acid to the affected parts, the patient being under the influence of chloroform, and subsequently a milder caustic, in the shape of nitrate of silver. The case, that of a patient æt. 25, terminated satisfactorily. The destruction of the surface effected by means of potassa fusa, as successfully practiced by Professor Humphry in cases of lupus of the face, would be applicable in cases of this disease.

CANCER OF THE EXTERNAL GENERATIVE ORGANS

usually occurs in the form of epithelial cancer, scirrhus and the medullary form of the disease being much more rare. Any part of the external generative organs may be the starting-point of the affection—the clitoris, the labia, are more commonly first affected. In its first stage epithelial cancer exhibits itself as a "little hard tubercle on the outer surface, but near the edge, of the labium." (West.) The

* *Mon. f. Geb.*, Nov., 1861., p. 348.

tubercle in question is not usually painful, but gives rise to itching and smarting. The diagnosis of the indurations due to commencing cancer of the labia is often a little obscure at first. In a case which fell under my notice, the occasional peculiar sharp pain darting across the groin led me to suspect cancer; the result proved this suspicion to be well founded. After some months' duration the surface becomes ulcerated, and the ulceration then spreads. The edges of cancerous ulcers are indurated, and this induration is perhaps the most distinctive feature of the ulcer; there is occasionally a bloody discharge; subsequently the inguinal glands swell, and the patient's constitution becomes affected in the characteristic manner. The disease may begin in the groin, as in a case of Dr. M'Clintock's, and travel to the generative organs.

Mr. Jonathan Hutchinson has collected the particulars of fourteen cases of epithelial cancer of the female genitals.* The labium was the part affected, also the clitoris and nymphæ in one or two cases. The longest time the disease had existed was five years. It returned after operation in three of the cases. Operation is said to have been finally followed by recovery in the other cases, save one, where the result is not given.

Treatment.—When, as is ordinarily the case, the disease belongs to the epithelial variety, early excision should be practiced, the position and relations of the tumor being such as to render the removal practicable. When the disease has so far advanced that deep ulcerations are present, such operations are not admissible. Applications, such as bromine in solution, are then more suitable.

ABSCESS OF THE LABIA; BOILS.

Abscess of the vulva is characterized by a rounded circumscribed swelling, of variable size, on one side only, usually on the inner aspect of the labium, and which is painful and very tender to the touch. It may be produced by blows or injury of any kind, by excess in coitus, by scratching, as in cases of pruritus, by masturbation, etc. The most frequent *seat* of the affection is the gland situated on either side, known as the vulvo-vaginal or Duvernoy's gland. This gland becomes inflamed, or the orifice of its

* *Med. Times and Gaz.*, Oct., 1860, p. 379.

duct becomes obstructed, and the abscess is thus produced. Most cases of circumscribed abscess of the labia originate in the gland in question. Abscess of the vulva of a more diffuse form may be observed as the result of puerperal affections, or it may occur in connection with œdema during pregnancy, or under other circumstances.

Boils are liable to form in the labia as well as other parts of the body. They occasion much irritation, and inconveniences of various kinds. When one boil is in process of healing, another often forms, and the affection may thus last a considerable time.

Treatment.—The ordinary circumscribed abscess of the labium which arises out of inflammation, or obstruction of the duct of the gland here situated, is best treated by early incision. After the opening has been made into it (which should never be done until the question of the swelling being possibly due to a hernia has been considered and dismissed), warm poultices should be applied, and perfect rest enjoined; opiates are necessary to relieve the pain.

Boils are often tiresome and troublesome to manage. Great cleanliness is essential, and generally tonic medicines are requisite. The solid nitrate of silver has been found a good application.

BLOOD-TUMOR OF THE VULVA.

This is not by any means a common affection. The tumor, composed of blood effused into the tissue of the part, and doubtless derived from the vessels of the erectile structure described as the bulb of the vestibule by Kobelt, is generally confined to one side. The tumor may be of considerable size; it is painless, unless when the effusion is considerable and the surface inflamed. Women are most liable to this "thrombus" of the vulva, as it is termed, during pregnancy, and the swelling has been sometimes so great as to impede delivery. After parturition, also, effusions are frequently found to have taken place into the cellular tissue in this situation. It sometimes happens that the tumor or the enlarged veins near it burst externally, and serious hæmorrhage results.

Dr. M'Clintock* describes the affection under the term "Pudendal hæmatocele." This author, who has placed on

* "Clinical Memoirs on Diseases of Women." Dublin, 1863.

record some most interesting cases of this affection, believes that a varicose state of the vessels of the vagina or vulva is not, as usually supposed, a precursor of the rupture which permits the effusion of blood: for out of 38 cases, tabulated for him by Dr. Halahan, there were only two in which such varicose condition of the veins was noted. The affection was observed in primiparæ in 13 out of 25 cases where the number of the pregnancy was noted. Dr. M'Clintock has never observed a case of thrombus of the vulva in the non-gravid state, except as a result of direct violence; and even during pregnancy its spontaneous occurrence is very rare, the more usual cause of the affection being a traumatic one. Mauriceau mentions a case in which a blood tumor in the left labium had existed for twenty-five years, and which, on being opened, gave issue to matter like the contents of an aneurismal sac.* This was, however, a very exceptional case; ordinarily, the thrombus of the vulva is a recent affection, of rather sudden formation, and in the majority of cases it is an accident attendant on labor.

Treatment.—These tumors are best treated by rest, and the continued use of an evaporating lotion. They are not to be meddled with surgically, unless the coagulum—which is rare—undergoes liquefaction, and a sort of abscess results; in which case puncture may be required.

The hæmorrhage which is liable to occur from bursting of these tumors is to be treated by very careful and continuous application of pressure combined with cold: it has occasionally proved fatal.

FIBROUS TUMORS OF THE VULVA; FATTY AND FIBRO-CELLULAR GROWTHS; ENCYSTED TUMORS.

Fibrous growths are not very frequently met with in the external genitals. They are characterized by slow formation, are painless and circumscribed; they may become pendulous, attached by a long pedicle. There is a peculiar form of fibrous tumor—the *recurrent*—of which an interesting instance is recorded by G. Simon.† In this case, after repeated removals, the disease always returned, and finally proved fatal. To the ordinary forms of fibrous tumor there attaches no such tendency to reappear.

* "Mal. des Femmes," tom. ii., p. 29.

† Schmidt's "Jahrb.," vol. cv., p. 63.

Fatty and Fibro-cellular Tumors of the Vulva.—Dr. Churchill* relates cases in which tumors answering this description have been present. Sir Henry Thompson has related an instance in which a firm lobulated tumor, weighing when removed nearly four pounds, grew from the external generative organs, hanging down to within two inches of the knees. Its surface was fissured and nodulated, and it was made up of hypertrophied cellular tissue, with fat in the interstices. It had been growing for nine years. The patient's age was 46. The tumor was chiefly inconvenient from its size.†

The *encysted tumor* of the vulva is rare. It grows to the size of an egg or less, and is found just within the vulvar aperture on one side. I have seen two instances of it.

Capelle records the case of a woman, æt. 30, who had an enormous enlargement, termed by him a *lipomatous tumor*, the size of the head of an adult, originating in the right labium, and extending as far as the knee. It was removed by the knife‡. The growth of the tumor dated from ten years previously.

Oozing Tumor of Labia.—A solid œdematous condition of the labia, with great secretion from the muciparous follicles, is sometimes met with. It is generally confined to one side; the enlargement is smooth, but firm; the surface is somewhat lobulated; and there is a profuse watery secretion. This condition was first described by Sir C. M. Clarke.

TREATMENT OF TUMORS OF THE LABIA.

The various forms of tumor of the labia are usually only to be treated by one method, viz., excision. The risk attendant on this operation is not usually considerable, but when the tumor is very large, or attached by a broad base, the hæmorrhage may be difficult to restrain, and it may be necessary to secure the vessels one by one as the operation is being performed; in some cases it is advisable to transfix the pedicle thrice or more, in order to secure control over the hæmorrhage preparatory to commencing the incision.

The *encysted tumor of the vulva* is best treated by dissect-

* "On Diseases of Women," 4th ed.

† "Trans. of the Path. Soc.," vol. vi., p. 269.

‡ *Journ. de Méd. de Bruxelles.* Jan., 1860, p. 41.

ing it completely out; if preferred, it may be simply punctured, but the cyst is then liable to refill.

In cases of oozing tumor of the labia, extirpation of the labium has been performed. Our present knowledge of the disease is somewhat vague and unsatisfactory; few opportunities are afforded for observing it, or for ascertaining whether it be a peculiar disease, or a modified form of the affection known as eczema of the vulva. Dr. Churchill recommends great attention to the state of the general health in such cases, and administration of a good generous diet. Rest, the use of astringent applications, as starch, decoctions of oak bark, or lotions, constitute the palliative treatment.

HERNIA OF THE LABIA.

An enlargement situated at the upper part of the labia on one side may be due to a hernia in this position. The hernia follows in such case the course of the round ligament. It is characterized by the position, which is in the course of the ligament in question, by its painlessness (unless inflamed), and by the impulse communicated on coughing.

HERNIA OF THE OVARY.

In some very rare cases, a tumor is observed at the upper part of the labium on one side (in the celebrated case related by Mr. Pott, on both sides), and constituted by the ovary, a pouch of the peritoneum in such cases being prolonged into the situation in question. Dr. Meadows has recorded a very interesting case,* in which there appears to have been primarily an ordinary irreducible inguinal hernia, but secondarily an ovarian hernia. The tumor in this case gave rise to so much inconvenience that it was removed by a surgical operation.

VARIOUS FORMS OF INFLAMMATION OF THE VULVA.

Vulvitis.—Acute inflammation of the vulva may be produced by blows, by undue exertion in walking, by intemperate sexual intercourse, by masturbation, by gonorrhœal

* "Obst. Trans.," vol. iii.

infection, by syphilis; and it may occur in conjunction with affections of the vulva or vagina of a chronic character, such as lupus, follicular inflammation, cancer, etc. Erysipelatous inflammation is found to occur here, as on other parts of the surface. Abscess of the vulva, in which a circumscribed enlargement of one part of the vulva only is present, is not included in the present series of cases, though vulvitis may lead to abscess.

The inflammation of the vulva produced by any of the foregoing causes may be more or less intense in degree, and the appearances observed will vary according to the time at which the observation is made. Swelling of the labia, pain on movement of any kind, tenderness, pain in micturition, redness of the mucous membrane, with more or less irritative fever,—these are usually present at the commencement of the disease. A discharge more or less copious, and generally of a purulent or muco-purulent character, is found issuing from between the labia; the skin at the upper and inner parts of the thighs is excoriated. The swelling may be very considerable. If the case be not seen until a later period, the swelling may have subsided; but the tenderness, together with a constant discharge, and a troublesome irritation and excoriation of all the mucous surface, are usually still found to be present.

In some cases we find the mucous surface of the vulva covered by diphtheritic patches of exudation, there being at the same time a sub-acute inflammatory condition of the vulva generally. The patient is, under such circumstances, weak and prostrated, and these cases may occur epidemically.

An aphthous form of inflammation may attack the vulva—an affection more especially observed, however, in children.

With vulvitis may be conjoined inflammation of, or discharge from the vaginal canal higher up; and in fact chronic vulvitis is usually associated with vaginitis. But the inflammation is very frequently almost entirely limited to the surfaces of the vulva; and hence the necessity for considering such cases apart.

Chronic Inflammatory Affections of the Vulva.—In *eczema* of the vulva, we find redness of the skin of the folds between the labia and the thighs and their neighborhood, producing very constant and troublesome itching. Undue walking exercise is sometimes sufficient to produce this

affection in a mild form. There is, however, a more chronic and obstinate form of the affection not uncommon. When the disease has become thus chronic, the skin is often found thickened, hypertrophied, and the hairs have in great part disappeared. *Prurigo* of the external genitals is not common; pruritus, where noticed, being due to other conditions of the parts.

Vulvar folliculitis, a condition for our knowledge of which we are indebted to Dr. Oldham and Dr. Huguier of Paris, is constituted by the presence of little rounded prominences irregularly scattered over the surface of the vulva. These prominences are painful and irritable, and after a time break and discharge a little puriform fluid; and the surface of the vulva generally becomes inflamed and red, and in places ulcerated. The inflammation is seated in the mucous follicles of the surface. This condition is met with more especially in pregnant women and during the heat of summer, and appears to be caused by want of cleanliness, by excessive indulgence in sexual intercourse, etc. The sphincter of the vagina is frequently, according to Dr. Oldham, contracted; and a painful hyperæsthetic condition of the vulvar orifice is sometimes associated with this follicular inflammation. The little ulcerated surfaces left after the escape of the pus are distinguished from ulcers due to syphilis by the fact that in syphilis the ulceration is more generally on the inner surface of the labia minora, by the larger surface of the ulcer, and by the peculiar history of its appearance; whereas, in vulvar folliculitis, the whole vulva is more or less affected, the surface ulcerated is very small, and not inclined to spread.

The affection is a very painful one; the patient finds a difficulty in sitting comfortably; pain on intercourse, troublesome pruritus, occasional bleeding from the surface, slight discharge—these symptoms are, one or more of them, generally observed.

TREATMENT OF INFLAMMATORY AFFECTIONS OF VULVA.

Rest, frequent ablutions, and attention to the general health, are of great importance, more especially in chronic cases.

In the treatment of cases of eczema of the vulva, in addition to rest, ablutions, etc., the use of lotions of glycerine or of solution of carbonate of soda will be found efficacious;

when the disease is chronic, caustics are often the only effectual remedies.

In cases of follicular inflammation of the vulva the use of a weak lead lotion, rest, and attention to the general health, will do much to remove the disease. Dr. Oldham's favorite remedy is an ointment containing hydrocyanic acid (2 drachms), diacetate of lead (a scruple), and coconut oil (2 ounces), the parts being bathed with cool water before applying the ointment. In some cases of this affection which have come under my own notice, I have used nitrate of silver, in the form of a strong solution, with satisfactory results.

VULVITIS, AND DISCHARGES FROM THE GENITALS, IN CHILDREN.

These cases require to be considered apart. A good deal of misconception, and consequent injustice to individuals, have arisen in connection with this subject, and it is only now beginning to be extensively recognized as a fact that vaginal discharges from the generative passages in young children may occur quite independently of contagion.

The discharges from the genitals observed in children have, for the most part, their origin in the glands just within the vulva, the vaginal canal within the hymen being generally unaffected.

The following are the chief causes of vulvitis in children:

1. These discharges are often witnessed in children of scrofulous or debilitated constitutions.
2. They may frequently be traced to ascarides in the rectum, directly or indirectly producing such an amount of irritation as to cause leucorrhœa.
3. Simple want of attention to cleanliness may be the only assignable cause.
4. A form of leucorrhœa is sometimes prevalent in children simultaneously with diphtheritic affections of other mucous passages.
5. Gonorrhœa communicated by the male.
6. The irritation of dentition.

The fact that the child is weakly, or showing other signs of a constitutional tendency to scrofula, would lead us to connect a vaginal discharge therewith. If the leucorrhœa proceed from vermicular irritation, there is generally extreme irritability and itching in the neighborhood of the rectal orifice, and other well-known signs of these parasites are observed. A circum-

stance which I have noticed more than once in connection with ascarides in the rectum, is the objection children affected with them have to sitting on soft cushions; anything hard or angular is preferred.

Cases of rape on children sometimes result in the production of discharge of a gonorrhœal nature. The moral evidence is, in the case of very young children, often open to great suspicion; the medical evidence must be given with great circumspection, for it is in the case of very young children that discharges from other causes are, as has just been pointed out, by no means unfrequently observed.

In cases where "violation" is suspected, the condition of the vaginal outlet is an important subject for consideration. A complete discussion of this interesting subject cannot be entered into here. The chief points to which attention should be directed, however, are the following: In *children* examined soon after violation has been effected, there are marks of violence on the external genitals, which may be bruised and lacerated, the laceration generally affecting the perineum, and together with this the hymen is found torn. These are the more usual results observed. A *discharge* from the genitals of a child, which the lower classes are often disposed to attribute to the effects of intercourse, is by itself worth nothing as a sign of violation. The evidence of injury to the perineum, and of laceration of the perineum, is much more to be relied on than the mere discharge. For further information the reader is referred to the standard works on "Medical Jurisprudence." In children the signs of violation persist for a much longer period than in adults, and, in the case of the former, signs may still be present from eight to fourteen days after the occurrence. In adults the marks of violence observable are often very trifling, especially in the case of married women, and, unless extreme in degree, these evidences disappear very rapidly. In cases of suspected violation, both in adults and children, the microscope might be very usefully employed in rendering the diagnosis more certain. Spermatozoa can be recognized for a very considerable time after being deposited in the vagina, and, under favorable circumstances, they may be found in the mucus of the upper part of the vagina as late as twenty-four or thirty-six hours after intercourse.

PRURITUS OF THE VULVA.

The terms "pruritus vulvæ," "pruritus of the vagina," etc., have been used to designate a class of symptoms referable to the generative organs, in themselves very distinctive and characteristic, and which are also exceedingly troublesome and inconvenient to the patient.

Varying exceedingly in form and degree, the essential characteristic of the class of symptoms now to be considered is an itching sensation, impelling the patient to relieve herself by rubbing or scratching the part affected. The sensation is now and then a kind of formication only—a creeping uncomfortable feeling on the surface of the external generative organs. More commonly, however, the sensations complained of are more intense in degree and somewhat different in kind. The irritation was accurately described by Dr. Rigby as "like that of urticaria—viz., a sensation of intolerable pricking and tingling, combined with burning heat and intense itching."* It is worse at some times than at others; it is often quite intolerable. Scratching affords hardly a temporary relief, and shortly gives rise to further inconveniences. Combined with the itching there is more or less constantly a feeling of heat in the parts affected quite as distressing as the other sensation.

Even in the worst cases there are usually remissions, during which the patient is more free from discomfort; and, as a general rule, at certain times of the day, or under certain peculiar circumstances, the sensation is experienced much more intensely; the affection is, indeed, more or less paroxysmal. Warmth particularly is liable to bring on a paroxysm; the heat of the bed is especially unbearable, the patient being obliged to leave her bed almost every quarter of an hour to obtain relief. After eating or drinking, too, the distress is usually greater. The congestion of the genital organs, associated with approach of the menstrual period, aggravates the affection.

The actual *seat* of the sensation is open to some variation. In most cases the irritation is not confined to one spot, but is felt equally over the pudendum, over the labia, and, in fact, all round the vaginal aperture. In some cases the nymphæ, the surface of the clitoris, and the adjacent surface of the vaginal canal, especially the anterior commissure

* "On Diseases of Women," p. 247.

above the clitoris, are the parts more particularly affected. Lastly, there are a certain number of cases in which the sensation has its seat, not at the external generative organs, but more internally.

The affection may be observed in women of all ages. It is perhaps most frequently observed at the climacteric period, when the menses are about to cease, although it is by no means limited to this period. It is more often observed in women advanced in life than in young women. The unmarried and married are almost equally liable to it.

The duration of the affection varies. Women sometimes remain subject to it for several months, or even longer. The pruritus is in many instances so persistent that the patient becomes worn out, exhausted, and prostrated in the extreme, owing to want of rest, annoyance, and pain so long continued. The necessity of applying the fingers to obtain a slight temporary relief by scratching occasionally excludes her from society. Altogether, a bad attack of pruritus is about as troublesome and inconvenient an affection as any to which a woman can be subject.

The nature and causes of the affection vary very much in different cases. Most cases are of a mixed character. Scanzoni regards the affection as hyperæsthesia of the sensitive nerves of the vagina, in some cases idiopathic, in others secondary, and in the latter depending on various affections of the ovaries, vagina, uterus, etc.; and the various alterations of the external generative organs witnessed in conjunction with it, are considered by this author secondary in their nature.

I have met with some very marked cases where the pruritus was most unquestionably due to acute anteflexion of the uterus, the disorder disappearing instantly the position and shape of the uterus were altered. Scanzoni also places flexions among the list of causes of pruritus.

Any circumstance favoring *congestion of the generative organs* may give rise to it. Thus, in the earlier months of *pregnancy* it is not rarely observed. Where a sluggish, inactive condition of the abdominal viscera is associated with digestive derangements, as in individuals taking but little active exercise and living well, there exists a liability to the affection; in cases of the latter description, hæmorrhoids are frequently present, and constipation is very generally observed. It is in cases coming under this category that the pruritus is found most often associated with a good deal of hyperæmia

of the external generative organs; and in this class of cases also, the scratching and rubbing most frequently have the effect of producing inflammatory changes of the vulva and parts adjacent.

Chronic diseases of the uterus are frequently connected with pruritus of the genital organs; in *carcinomatous* disease of the uterus, the affection in question is certainly very frequently witnessed. Possibly the frequent association of uterine cancer and pruritus is connected with the acrid character of the fluid discharges then passing over the vulva. Cases in which it was due to *superficial granular erosion of the os uteri* are mentioned by Drs. West and Churchill.

Radical disorder of the general health, quite independent of disease of the generative organs, has been found to be the cause of pruritus in some cases. Thus Dr. West alludes to an instance in which a young lady suffered severely from pruritus, which turned out to be due to diabetes.

An *acrid condition of the secretions of the sebaceous glands of the vulva* appears to be sometimes the cause of the pruritus. *Ascarides* in the rectum have been known to produce it.

In individuals of uncleanly habits, pruritus of the vulva is sometimes produced by *pediculi*.

An *aphthous* form of inflammation of the vulva was first alluded to by Dr. Dewees as now and then giving rise to pruritus of the vulva; the inner surface of the vulvar commissure being covered with little aphthous patches, and more or less congestion of the parts generally being conjoined. How far this condition is primary or secondary cannot be determined.

Inflammation of the mucous follicles of the vulva—*vulvar folliculitis* (Oldham)—is a disease of the vulva in which troublesome pruritus may be present.

In a case which came under my own notice, very intense and obstinate pruritus was found to be dependent on *warty growths from the under or vaginal surface of the urethra*, the whole forming a tumor the size of a walnut. In this case the removal of these growths was necessary, and a cure soon afterward resulted. The *vascular tumor of the urethra*, which, as is well known, grows within or at the urethral orifice, gives rise to great disturbance to the function of micturition; less frequently, it is a cause of pruritus.

Lastly, it may be stated generally that there are few alterations in the mucous surface at or near the vaginal aperture which may not be associated with pruritus.

Treatment.—The *general* treatment of pruritus of the vulva consists in correcting whatever may be found wrong or prejudicial to health in the habits, mode of life, diet, and regimen of the patient. The digestive organs should be duly watched, constipation prevented. The food given must be light and simple. In that form of the affection observed in women past the climacteric age, when there is debility, defective digestion, and want of appetite, without any, or, at all events, any considerable, alteration of the skin covering the pudendum, mineral acids combined with bitter infusions are of the greatest service. Small alterative doses of blue pill are occasionally useful.

The *local* treatment consists in the removal of any condition which may be associated with the pruritus, whether it be the cause or the effect of the same. And this local treatment will be, according to the nature of the case, palliative or curative. It will necessarily vary according to the actual condition of the parts discovered on examination. Generally there is some abnormal condition of the surface of the labia and adjacent parts, which, as before remarked, may be primary or secondary as regards the pruritus. In some cases the local treatment is all that is necessary for the cure. Cleanliness is the first essential. The external genitals must be frequently and thoroughly washed with tepid or quite cold water. The hip-bath should be frequently used, for the application of water is almost always grateful to the patient. If there be much fulness of the blood-vessels of the vulva, leeches are sometimes necessary. A rather strong cauterization of the os uteri with solid nitrate of silver will sometimes succeed when other measures fail.

Respecting special topical remedies, Scanzoni speaks most highly of a mixture consisting of chloroform two parts, and almond oil thirty parts, to be applied to the surfaces of the labia and of the ostium vaginæ. I have found this remedy of the greatest service, but the quantity of chloroform is too small. One part of chloroform in six of oil is the proportion I have used. Dr. West finds goulard water and hydrocyanic acid a very valuable application. When aphthæ are present, borax in solution with a little morphia (borax 3iv., morph. hydroch. gr. viij., rose-water ʒx.—West) has been found very efficacious. Dr. Rigby found an ointment composed of equal parts of ung. hyd. nit. ox. and cod-liver oil very successful when other measures

had failed. Alum and powdered sugar, sprinkled over a tampon of cotton and inserted in the vagina twice a day for a week, is a remedy used by Scanzoni. The latter author states that Scholz's remedy, the calladium sequinum, has in his hands given satisfactory results. Cauterization by means of nitrate of silver has been employed by several. For pediculi Churchill recommended turpentine, tobacco, or calomel in powder. [Mild mercurial ointment is almost a specific for pediculi.]

Rest, cooling lotions, etc., are sometimes required to subdue the inflammation consequent on the scratching.

CHAPTER LI.

DISEASES OF THE VAGINA.

Methods of Examination; Digital and Ocular Examination—Normal Condition of the Vaginal Canal.

OBSTRUCTIONS OF THE VAGINAL ORIFICE AND VAGINA; THEIR DIAGNOSIS.—Diagnosis of suspected defective Development, or of entire Absence of the Uterus, Vagina, etc.—Double Vagina—Hardness or Resistance of the Vaginal Wall.

TUMORS PROJECTING AT OR BEYOND THE OSTIUM VAGINÆ.—DIAGNOSIS.—Cystocele; Ascites with Prolapse of Vaginal Wall; Vaginal Cyst; Menstrual Retention—Vaginal Rectocele; Entero-vaginal Hernia—Tumors connected with the Uterus—Polypus of the Vagina.

DISEASES OF THE VAGINA.—Congenital Defects: Stricture of the Vagina—Extreme Narrowness—Various unusual Conditions of the Hymen—Menstrual Retention associated with Imperforate Hymen—Treatment of Defects and Occlusions of the Vagina.

Vaginitis; Treatment—Spasm and Hyperæsthesia of the Vulva; Treatment.

Fistulæ: Vesico-vaginal and Recto-vaginal Fistula; Treatment.

Tumors of Vaginal Walls; Treatment.

Methods of Examination.—The ordinary method of obtaining information as to the condition of the vagina is by the introduction of one or more fingers into the canal—*digital* examination. It is sometimes necessary to add to this an ocular examination of the canal, either with or without the aid of the speculum.

Digital examination of the vagina is effected in the following manner: The patient lying on the left side, the forefinger of the right hand, previously well oiled, is introduced

into the vagina. For the purpose of ascertaining the condition of the parts near the lower extremity of the canal, the introduction of one finger is sufficient; but it is generally necessary to introduce the second finger also, to examine the condition of the vagina higher up: in a few cases, the introduction of all the fingers is found necessary. In effecting this operation, the left hand should be placed on the right hip of the patient. This assists in giving a correct idea as to the position of the entrance of the vagina. The finger or fingers must be introduced slowly and with care.

The examination of the *canal of the vagina* is accomplished by the finger or fingers introduced as before described. Information is thus obtained as to the size, shape, and direction of the canal, as to the state of the lining membrane, its sensibility, smoothness or roughness, and its temperature. In certain cases, the eye may be also used, in order to ascertain the presence of undue redness or other changed conditions of the mucous membrane, and a more minute examination of the canal by means of the speculum is necessary where the presence of unnatural communications between the vagina and the bladder or rectum is suspected; also in some other cases.

Normal Condition of the Vaginal Canal.—With the patient lying on the left side, the distance from the upper extremity of the vagina to the situation of the hymen is, in round numbers, three inches, as a rule rather less. This distance measured off on the forefinger, extends from the point of the finger to the centre of the proximal phalanx; but the measurement from the upper part of the vagina to the lowest part of the commissure of the vulva is four inches. Thus the distance from the external surface of the body to the extremity of the vagina is one inch greater than that of the vagina itself. Normally, when the tip of the forefinger touches the highest point of the vagina, the metacarpophalangeal joint corresponds exactly with the entrance of the vulva. In very stout subjects the distance appears greater because of the thickness of the labia majora.

In effecting an *ocular* examination of the vagina, the patient is placed in the position above described, or, as is more convenient under some circumstances, lying on her back and the knees separated. The examination by means of the speculum is also effected in either of the two positions indicated, but most easily in the latter. [We never place the patient on the back for a speculum examination,

because we use only the Sims speculum which requires the left lateral semi-prone position.] In searching for fistulæ in the vesico-vaginal septum, the patient is sometimes placed on the hands and knees.

OBSTRUCTIONS OF THE VAGINAL ORIFICE AND VAGINA:
DIAGNOSIS OF THESE.

On attempting to introduce the finger at the vaginal orifice an obstruction may be encountered. This obstruction may be due to any one of the following conditions:

- Adhesion of the labia majora;
- Absence of the vagina (congenital);
- Imperfect formation of vagina;
- Unruptured hymen; or,
- Stricture of the lower part of the vagina (acquired).

Adhesion of the labia majora is distinguished from absence of the vagina by the use of the probe or finger. Imperfect formation of the vagina is also readily distinguished from either of these two former conditions. Obstruction due to the hymen is distinguished from the two former by its situation, the hymen being a short distance within the vaginal canal and not on a level with the perineal surface.

In cases where the vagina is very short, ending at or near the hymen, the physical examination may reveal conditions pretty nearly resembling those where the hymen is the obstructing agent; the finger can only be made to pass a short distance. The distinction then rests on the presence of the catamenial discharge in the latter, its absence in the former class of cases. Where there is obstruction to intercourse, but menstruation is present, it is clear that the vagina cannot be altogether absent. But there may be obstruction to intercourse from a thickened, but still perforated, hymen. If the hymen were absolutely imperforate, there would be menstrual retention with its peculiar signs, in addition to other signs of obstruction. Congenital stricture of the vagina is usually situated higher up than the seat of the hymen. Congenital narrowness of the vagina would be easily and obviously distinguished from obstruction due to thickened hymen. Spasmodic action of the sphincter vaginæ may produce obstruction to the entrance of the finger, or to sexual intercourse, but this form of obstruction could hardly be confounded with that due to thickened or imperforate hymen.

Diagnosis of Cases of Suspected Defective Development or of Entire Absence of the Uterus, of the Vagina, etc.—It is occasionally necessary to determine what is the state of the internal generative organs in such cases, in reference to the advisability of recommending marriage.

In the first place, it appears from a careful consideration of recorded facts, that the condition of the *external* generative organs gives but little clue to that of the internal; that is to say, that there is no constant and invariable relation between the degree of development of the generative organs, external and internal. Thus we meet with cases recorded in which the vulva, being pretty well developed, the pubes well covered with hair, the breasts not imperfectly formed, the uterus is entirely absent. And the opposite condition has been met with, viz., absence of developed external generative organs with a uterus sufficiently well formed to exercise its functions. Between the two extreme cases all sorts of gradations are witnessed and have been recorded. In cases where the internal generative organs are imperfectly formed, the variations from the normal standard are numerous in kind and degree; the uterus may be double, one cornu being well developed, the other imperfectly so, or both equally well developed. In extreme but very rare cases the uterus is entirely wanting. Kussmaul,* in his elaborate work, states that many of the older recorded cases of absence of uterus are not reliable, as the diagnosis rested on the absence or defective condition of the vagina; and he believes that in the more modern instances, even where a more careful and extended examination was performed, one cornu of the uterus may still have been present, escaping recognition.

It is usually the case, that where the uterus is defectively formed, the vaginal canal is also defective in some way; but cases are on record in which the vagina was altogether absent, while the uterus was developed enough to fulfil its functions: in these instances most may be done in the way of relief to the patient.

1. The indications offered by the state of the *breasts*. They may be found tolerably well developed in cases where careful examination convinces us that the uterus is wanting, and the vagina absent. And, as Kussmaul very pertinently observes, the mammary glands do now and then become

* *Op. cit.*, p. 108.

enlarged and developed in the opposite sex. Breasts tolerably large and developed would, however, indicate that the patient had arrived at the age of puberty.

2. The development of the vulva, presence of hairs on the pudendum, etc. The vulva may be apparently well formed, there may be the usual amount of prominence of the mons veneris, the parts may be well covered with hair, and, in fact, the external appearances may be such as are observed under normal circumstances, and yet the uterus and vagina may be wanting. Indeed, cases have been observed, as the one related by Dr. Ormerod and Dr. Quain, in which, with these external apparent evidences of womanhood and capability for marriage, not only was the uterus absent, but the ovaries were wanting. A "small mass, apparently of a glandular structure," found in the left wall of the narrow sac representing the vagina, was the only possible representation of the ovaries.* The patient died in an anæmic state at the age of 33, and had suffered from nasal hæmorrhages, the monthly periodicity of which seemed to point to vicarious menstruation. The case is remarkable as showing very clearly how little relation subsists, necessarily, between the development of the external and internal sexual organs. I have myself met with cases in which the breasts were normal, the pudendum normal and well covered with hairs, but no evidence of a uterus could be obtained.

When it is an object to ascertain by examination whether the uterus and vagina be present or not, the method to be pursued is the following: A sound is to be introduced into the bladder, which should not be empty at the time the examination is made, and held lightly but firmly therein. One or two fingers of the left hand, well oiled, are then to be introduced as far as possible into the rectum. The sound can now be felt by the extremity of the finger in the rectum, and a means is at once afforded of judging of the nature of the tissue intervening. If the uterus be absent, the sound can be felt by the finger high up in the pelvis, and no intervening hard substance, such as that constituted by the uterus, can be detected; but it is necessary, in order that this point may be conclusively made out, that the sound in the bladder and the finger in the rectum should be pushed as far as possible, for if it be only just made to enter the blad-

* "Trans. Path. Soc.," vol. vii., p. 271.

der, the point of the instrument is, under ordinary circumstances, readily felt by the finger in the rectum. The uterus would of course be sought for in the first instance in the middle line of the body, but if a careful examination failed to discover any hard substance in that position, it should be sought for on each side. Where the uterus is double, it is very frequently not symmetrical, the one cornu being large and well developed, the other small and imperfect; and in such a case the larger cornu lying, as it would do, rather to one side, might not at first be made out, or if made out, might be mistaken for something else (Kussmaul). This double or combined examination by the rectum and bladder is thus capable of giving important information, for although we might not be able to affirm after making such an examination that the uterus was entirely absent, we could hardly fail of detecting an enlarged and distended uterus, supposing the uterus to be so enlarged and distended.

The method of examination in question also enables us to form some idea as to the condition of the parts in suspected absence of the vagina. Thus, in cases where the only external evidence of a vagina is a small blind sac which is just capable of receiving the point of the sound, or in cases where the sac is large enough to admit the little finger for an inch or two, the combined examination furnishes data of some value. If the parts intervening between the point of the instrument and the finger be very thin, it gives reason to think that there is no vaginal canal between: but this is by no means conclusive evidence of the fact. If the uterus were found very small, or absent altogether, the vagina would be more likely to be also absent. But, on the other hand, supposing the uterus were found to be present, the septum between the rectum and the catheter being apparently very thin, it would require some care to decide as to the presence or absence of the vaginal canal in this thin septum. In some cases the uterus is pretty well formed, and becomes distended with menstrual blood, which cannot escape, because the vagina is absent at some part of its course; and the vagina may be nearly the natural size at its extreme upper and lower portions, the intermediate portion being wanting; or it may be, as is the more common case, very small below, and absent above.

Double Vagina.—The vagina may be double, in which

case two canals open side by side externally. The septum between them is usually very thin. (See Malformations of Uterus.)

Hardness or Resistance of the Walls of the Vagina.—A condition of the wall of the vagina, recognizable by the touch and very important in a diagnostic point of view, is *firmness, hardness, and resistance*, especially at the upper and interior part of the canal. The vagina appears to the touch fixed, rigid, and immobile; such a condition is one of the early signs of the presence of cancer of the lower part of the uterus. The non-resistant, soft, velvety feel of the mucous membrane is wanting in such cases at the affected parts.

Cancerous disease of the vagina is more frequently not primitive, the disease usually spreading from the uterus. When the disease is far advanced, we may find the vaginal walls very much thickened by the cancerous deposit; nodulations may be felt; and ulcerations, which, when sufficiently advanced, give rise to production of fistulous openings, are detected by the finger. The diagnosis of cancer of the vagina is intimately connected with that of cancer of the uterus, the general symptoms in the two cases being, for the most part, identical.

TUMORS PROJECTING AT OR BEYOND THE OSTIUM VAGINÆ; DIAGNOSIS.

Soft Non-resistant Tumors.—A soft *fluctuating* tumor presenting itself at the ostium vaginæ may be constituted by a *prolapsed bladder* (cystocele), the cervix of the uterus being very generally in such cases prolapsed together with the bladder. Or there may be *prolapsus of the vaginal wall in conjunction with ascites*. In the former case there is a peculiar difficulty in regard to micturition, for the patient is unable to evacuate the bladder perfectly unless the swelling be first reduced by pressure upward. Micturition is frequent and painful, a ropy mucus is usually present in the urine discharged from the bladder. The catheter introduced passes downward into the tumor, the nature of which is thus at once made manifest. In the case of the other, but less common, affection the tumor is also reducible by pressure, but returns on the patient resuming the erect posture. Dr. West* relates a case in which a *cyst*

* *Op. cit.*, p. 634.

of the vagina, the size of an egg, projected from the vulva, and had just the appearance presented by a prolapsed bladder. By the use of the catheter, however, the nature of the tumor was made evident.

In cases of *retention of the catamenial fluid from imperforate hymen*, there will be found between the labia on examination by the finger a somewhat tense tumor with fluid contents, and this tumor may project slightly from within the os vaginæ. In such a case the absence of menstruation, and the impossibility of finding an opening into the vaginal canal, would clearly indicate the nature of the case.

A soft but *non-fluctuating* tumor projecting from the vagina at its inferior part, and reducible by pressure, is present in cases of *vaginal rectocele*. In such cases the nature of the tumor is easily made out, the scybalæ in the projecting pouch of the rectum are felt by the finger: moreover, the finger can be introduced in *front* of the tumor; in cases of cystocele, on the contrary, the finger passes only *behind* the tumor.

Entero-vaginal Hernia.—Another variety of tumor is that due to hernia of the intestines—entero-vaginal hernia. This is a rare affection. Some exceedingly interesting cases of the affection are related at length in the work of the late Dr. D. D. Davis.* A case of this rare affection was also recorded by Mr. Prescott Hewett.† The tumor projected beyond the labia, and proceeded from the floor of the vagina. The patient was suffering from symptoms of obstruction, and had not called attention to the existence of the tumor in question. Dr. Fordyce Barker,‡ in an interesting paper, relates four cases. In the first, swelling came on during labor; it was reduced under chloroform; labor proceeded well; cure. 2. A pregnant woman at seven months had a sudden strain; pain; severe peritonitis; a soft tumor was found projecting at vulva, size of the fist; reduction; lint and tannin pessaries employed; delivery at term; cure. 3. Patient in eighth labor twenty-eight hours; violent hysterical mania; urine drawn off under chloroform; the head was found descending, and a vaginal enterocele also; it was reduced; the forceps applied; delivery; cure. 4. By Dr. Clements. Misstep in the seventh month of pregnancy; fall forward, followed by

*“Principles and Practice of Obstetric Medicine,” vol. i., p. 161.

† *Brit. Med. Journ.*, Sept., 1861, p. 254.

‡ *Amer. Journ. of Obst.*, vol. ix., p. 177.

pear-shaped protrusion; reduced by fingers; kept in bed five weeks, but tumor always came down on defæcation; delivered at term. Nine days after labor violent pain during defæcation, followed by shivering, cold extremities, nausea, fainting; chloroform and knee-chest position; relief; protrusion felt in vagina, size and shape of distended thumb of a glove, at bottom of Douglas pouch, a little to right. Several succeeding attacks came on after rising in the morning, and in fifteen minutes developed symptoms of acute peritonitis; pain and tenderness; tympanitis; rapid pulse. Sponge pessary used with advantage. Attacks gradually went off at end of two years.

The nature of the tumor is recognized by means of the tympanitic sound elicited on percussion, by the impulse produced on coughing, usually by the possibility of reduction of the tumor by the taxis, or on the patient assuming the horizontal posture. The employment of the catheter will distinguish the case from one of cystocele.

[The cases above described seem all to have been hernial protrusions from the Douglas *cul de sac*.

We occasionally have hernial protrusions through the anterior wall of the vagina.

Prof. G. M. B. Maughs (Prof. of Obstetrics and Diseases of Women in the Missouri Medical College) describes an interesting case in the *St. Louis Med. and Surg. Journ.*, May, 1879.

The hernia descended through the vesico-uterine *cul de sac* and protruded from the vagina "in a sausage-shaped body" for two or three inches. Prof. Maughs reduced the hernial mass, pushing the vaginal covering up into the abdominal cavity. When it was reduced the finger could be pushed up through the hernial opening between the bladder and the uterus. Prof. Maughs then had the happy thought of closing the vaginal aperture by silver sutures after scarification. The operation was successful. The patient bore two children afterward without reproducing the hernia. And Dr. J. Marion-Sims examined her seven years after the operation (1877) and found the parts operated on perfectly normal. This is the only case of the kind on record ever cured.

Two months ago (October, 1882), Dr. Bailey, of Middletown, Conn., referred to my father a case of entero-vaginal hernia, where the hernial mass, size of a small orange, protruded from the right side of the vulva. It descended

through an opening to the right of the neck of the bladder, near the pubic ramus, and large enough to admit the point of the index finger. She returned home without our attempting to do anything for her relief.]

Hard Resisting Tumors projecting from the Ostium Vaginae.—When the projecting tumor is more or less solid or firm, it is due to *inversion of the uterus*, *polypus of the uterus*, *prolapsus of the uterus*, or to *elongation and hypertrophy of the cervix uteri*. With these may be combined prolapsus of the adjacent organs, the bladder, rectum, etc.

DISEASES OF THE VAGINA.

Congenital Defects.—In some rare instances certain of the external generative organs are wanting, or exhibit only a rudimentary formation. The whole of the external sexual organs may be found absent, or there may be present what is termed "cloacal formation," the rectum, the vaginal canal, and the urethra opening into one common external orifice. And irregularities of other kinds may be observed, giving rise to conditions which have been described as due to hermaphroditism. A full consideration of these various kinds of defective formation of the external generative organs cannot be entered upon in this work. Particulars concerning these rare cases will be found in several systematic treatises.* The defects which are the most practically interesting are those which relate to the condition of the orifice of the vagina, and the canal of the vagina itself. These have been already described in previous remarks on their diagnosis.

STRICTURE OF THE VAGINA.

There are two classes of cases coming under this denomination. First, we have those *congenital* instances in which the vagina is normal below, the hymen in its usual position, but a short distance beyond the hymen the finger meets with an obstruction—the canal of the vagina, in fact, appears far too short. The apparent shortness may prove to

* A good account of the subject will be found in Kiwisch's "Klinische Vorträge," Band ii. (third edition by Scanzoni. Prague: 1857). On the subject of hermaphroditism, the reader is referred to the admirable essay by Sir J. Y. Simpson, published in vol. ii. of his "Obstetric Works."

be due to a fibrous or membranous septum dividing the vagina transversely into two parts. The usual seat of this septum is the junction of the upper with the middle third of the vagina. Secondly, we have cases of real stricture of the vagina, due to adhesions of the upper walls, following lacerations or wounds of the vagina, in parturition, with subsequent cicatrization and contraction.

Regarding the congenital class of cases, we may have complete absence of an opening in the septum, there being then usually found an accumulation of menstrual blood above the obstructing membrane or partition; or, on the other hand, there may be an opening sufficient to allow of the escape of menstrual blood. It is obvious that in the former case there is no possibility of menstruation occurring, and impregnation is equally impossible. Such instances are not common. Complete congenital closure of the vagina might be confounded with imperfect hymen, or with imperforate condition of the os uteri. Incomplete (*i.e.*, permeable) congenital stricture of the vagina might be confounded with obstruction from resistant hymen. The diagnosis in these several instances would be made out by careful combined examination by the vagina and rectum. The finger being introduced into the rectum, we are enabled to determine whether the obstruction felt be really the extremity of the vagina or not; the position of the uterus would indicate this early enough. It is of great assistance in such cases to make an examination during the menstrual period, as apertures are then found which escape recognition at other times.

Acquired complete stricture of the vagina is very easily distinguished from the congenital variety by the circumstance that in the latter the patient has never menstruated. In acquired stricture of the vagina the canal at the seat of the stricture is generally irregular in form and shape, contorted or knotty, and firm fibrous bands are to be felt under the finger. The seat of the stricture may be high up in the vagina, or low down; any part of the canal may be affected. Menstruation more often still persists, but the stricture, if complete, causes complete retention; and, moreover, the patient in the latter case remains afterward sterile. The history very generally points conclusively to the diagnosis in these instances of acquired stricture of the vagina.

Extreme narrowness of the vagina, hardly amounting to stricture, may be met with, the canal being quite patent,

although exceedingly small; the condition simply interfering with due performance of sexual intercourse, though not necessarily with impregnation. It has importance, for this reason in the first place, and in the second from the circumstance that when the vagina is very narrow it is also often short, and the uterus is found imperfectly developed. All degrees of this narrowness may be met with in different cases.

It may be worth while in this place to mention the fact that, in cases of vaginal stricture or narrowness, sexual intercourse has been known to have been effected by the urethra; the latter canal has in such cases been found to have undergone great dilatation.

The treatment of these various conditions will be considered presently.

VARIOUS MORBID OR UNUSUAL CONDITIONS OF THE HYMEN.

The hymen is a membrane varying exceedingly in its form, structure, and dimensions. On making a digital examination, the point of the finger, in passing backward, downward, and inward from the point where the urethral orifice is situated, encounters the hymen, if this membrane be present; the membrane itself being situated within a short distance of the posterior labial commissure. The finger passes into a recess for a short distance before it comes in contact with the obstructing body. The most usual form of the hymen, where still intact, is crescentic, the concavity being directed forward and upward: the canal of the vagina is thus closed posteriorly, but not anteriorly. This is the most common form, but occasionally the hymen is circular, and the opening into the vagina is in its centre. In the first case the tip of the finger would meet with the opening a little nearer to the urethral orifice than in the second. The presence of the hymen was at one time considered evidence of virginity, and its absence proof to the contrary; but neither of these positions is sustained by known facts. Instances are recorded of the presence of the hymen in prostitutes who were at the same time the subjects of syphilis; on the other hand, in women of known virtue and propriety of conduct the hymen is often indistinct or wanting. If we are called upon to make a digital examination of a reputed virgin, we should expect to find a difficulty in introducing the finger into the vagina, owing

to the presence of the hymen; but we should not be justified in forming a conclusion unfavorable to the character of the individual from the fact, alone, that no such impediment to the passage of the finger was experienced. And with reference to the *degree* of resistance, we should expect to find, in cases where the hymen is tolerably perfect, considerable differences in different cases. Thus, the membrane may be, and indeed usually is, thin and non-resistant enough to allow of the ready distension and stretching of the orifice in its centre or at its side by the pressure of the finger; in certain rare cases this condition persists after marriage with the occasional very troublesome result that intercourse is imperfect or impossible: on the other hand, it may be so dense and tough as to resist this distension altogether, or the membrane may be so loose and lax that the pressure of the finger, instead of opening it, carries the membrane before it, as in the case of the finger of a glove pushed within itself. Lastly, there may be only such slight perforation in the membrane as to be hardly recognizable, and not at all by the point of the finger alone: the obstruction is apparently complete.

Menstrual Retention due to Imperforate Hymen.—Menstrual retention associated with imperforate hymen is observed in young women who have never menstruated, who have arrived at puberty, and who have at that time experienced, monthly, and month after month, severe pain in the hypogastric region without any fluid escaping from the vagina, and who present symptoms indicative of distension of the uterus with fluid for which there is no natural outlet. In most of such cases, the hymen is found to be imperforate, and the finger, when introduced into the vulva, comes upon a very tense elastic swelling, constituted by the thickened hymen pressed downward and put on the utmost stretch by the fluid incarcerated above it. The menstrual blood distends the vagina and the uterus under such circumstances, and we should expect to find evidence of such distension of the uterus in the presence of a round firm tumor above the pubes (see Examination of the Abdomen), or on examination from the rectum. But in some cases, although the patient has never menstruated, and although there are all the signs of menstrual retention to an extreme degree, we do not find, on examination, any tense elastic swelling at the situation of the hymen; for the menstrual retention may be due to congenital closure of the os uteri, or to an

obstruction of the vagina higher up than the situation of the hymen. The latter description of cases will be presently considered. In one case which came under my notice there had been at first such a retention. The fluid was discharged by bursting, and the aperture afterward again closed up but not quite completely, leaving such a minute aperture that it was with difficulty discovered.

TREATMENT OF VARIOUS FORMS OF OCCLUSION OF THE VAGINA.

Absence of the Vagina.—There are two classes of cases to be dealt with—(1) Those in which the absence of the vagina is accompanied with signs of menstrual retention; and (2) those in which no signs of menstrual retention are present. In the first class of cases operative measures are generally called for, while in the second this is not usually, or at all events necessarily, the case. The cases of retention have been already dealt with (see p. 40).

The point has hardly been raised as to whether in cases of absence of vagina without menstrual retention operative measures are called for. If the uterus be present, if the patient be healthy and well-formed, and, further, if menstrual molimina have been present—even although there may be no evidence of menstrual retention—under these circumstances, the attempt to make an artificial vagina could not be said to be absolutely unjustifiable. Until the uterus has been reached, it could not be said that menstruation, and consequently pregnancy, was quite out of the question. In making these remarks, I have in my mind a case respecting which I was consulted some time since, and in which I have reason to think that the formation of a vagina would be attended with advantage.

Stricture or Occlusion of the Vagina.—The stricture of the vagina, resulting from the contraction following mechanical injuries received during parturition, is often very difficult to remedy. The two methods of cure are by incision and subsequent dilatation, or by dilatation alone; and which of the two courses is preferable will be determined by a consideration of the nature of the case. Where the stricture is very firm, and at the same time limited in extent, an incision by a blunt-pointed bistoury at once restores the canal to its natural size, the opening being maintained by careful plugging of the vagina with oiled lint. The plug-

ging must be persisted in for some days. In other cases, where the stricture affects a greater extent of surface, cutting may be less necessary, and the gradual dilatation by bougies may be preferable. Any tight bands encountered as the process of dilatation is being effected should be just touched with the edge of the knife to facilitate the dilatation.* In cases where labor supervenes in these cases of stricture of the vagina, the fœtal head forms a very efficient dilating body, but the dilatation often requires to be assisted by the careful use of the knife. Much time and patience will be necessary in some cases to restore the canal to its proper condition, owing to the great tendency of the cicatricial tissue to contract after being divided. Where cutting operations are performed strict antiseptic precautions are essential.

In cases where the stricture is congenital, there being, however, a minute opening, allowing of menstruation but rendering intercourse difficult, the existing opening is to be sought for by means of the speculum, and enlarged by the knife, the canal being subsequently plugged with lint, to prevent adhesion of the cut surfaces. [Cut where there are obstructing bands; dilate with fingers, nick with scissors, distend, tear laterally, and then use the glass vaginal plug of Dr. J. Marion-Sims. It is much better than plugging with lint. The same vaginal plug must be used in such cases as those below alluded to as *obstruction due to the hymen*.]

Simple narrowness of the vagina will be best treated by careful employment of bougies, gradually increased in size until the canal is sufficiently large to admit of intercourse. Parturition is the great cure for this condition, and it is remarkable how easily an apparently very narrow vagina gives way, so as to allow of the passage of the large head of the fœtus. Once fully dilated in this manner, the cure is complete.

Treatment of Obstruction due to the Hymen.—In patients who have menstruated, the obstruction usually requires to be removed on account of its interference with the performance of sexual intercourse. The treatment of such cases is simple. The operator having carefully made out by examination the shape, size, and relations of the hymen, which, un-

* Dr. Braxton Hicks has related some interesting cases of acquired stricture of the vagina. The plan pursued in treating these cases, and which proved very successful, was a combination of cutting and dilatation.—("Obst. Trans.," vol. iv.)

der these circumstances, may be found exceedingly dense, firm, and thick, makes three or four incisions radiating from the existing aperture, by means of scissors, in the obstructing membrane, care being taken not to involve the vaginal wall itself in the incision; it is recommended by some authorities that a circular piece be actually cut out, the whole hymen being thus removed. After the operation, a piece of lint, rolled up in a cylindrical form and dipped in oil, should be carefully introduced. The tampon of lint should be so large as to slightly extend the canal and prevent the healing by the first intention. The lint will have to be removed, and a fresh piece inserted twice a day, for the next two days.

The treatment of cases of imperforate hymen, causing menstrual retention, has been already discussed (see p. 40).

VAGINITIS.

Inflammation of the vaginal canal, in an acute form at least, is not a very common affection, although in cases of chronic inflammation of the uterus there is generally an increased vascularity of and secretion from the vaginal mucous membrane. Again, vaginitis is sometimes present in cases of gonorrhœa, but in the latter affection it is ordinarily the vulva or entrance of the vagina, rather than the vagina itself, which is the seat of the inflammatory action.

Treatment.—In cases where there is much heat, tenderness, and congestion of the vagina, leeches may be advantageously applied round the lips of the vulva; fomentations, by means of flannels wrung out of hot water or decoction of poppies, may be usefully employed after the bleeding, as a substitute for it in some instances. Hip-baths and injections of tepid or of quite cold water will be necessary, a stream of water being applied by the self-acting douche apparatus, described at p. 120. Other local applications may be required where the disease has assumed a chronic obstinate form. Scanzoni speaks highly of the employment of a cotton tampon, the surface of which is sprinkled with powdered alum, this being inserted in the vagina for a few hours every two or three days: the alum to be diluted with powdered sugar, if the sensibility be considerable. Solution of nitrate of silver of varying strengths, according to circumstances, or the solid stick of caustic, may be also necessary. The general treatment is quite as important

in the management of such cases as the local one. Rest, abstinence from intercourse, the horizontal posture, gentle aperients, food in moderate quantity, absence of excitement—all these are essential to the cure of the affection. When the patient has recovered, the principal cause which brought about the attack must be for the future avoided (see General Treatment of Leucorrhœa, p. 117). The vaginitis associated with gonorrhœa requires a peculiar treatment. In the treatment of all cases of vaginitis, whatever be the cause, very great importance is to be attached to the observance of cleanliness: frequent ablutions should be employed. [For vaginitis from whatever cause, irrigation and cleanliness are essential. Wash out the vagina thoroughly, then apply a solution of nitrate of silver, one to two drachms to the ounce of distilled water, freely to the whole surface. It will produce pain when it touches the meatus urinarius and outer orifice of vagina. A little vaseline or olive oil may be applied to the sensitive region. Twenty-four or thirty-six hours afterward the patient must use warm vaginal injections properly, according to Emmet's plan, on back, and bed-pan, medicated with carbolic acid, borax, muriate ammonia, or any other antiseptic two or three times a day. In five or six days the nitrate of silver may be applied again if necessary; often one application well done suffices. But the patient must keep up daily irrigation of the vagina (twice a day) indefinitely in chronic cases. I have seen chronic vaginitis cured in a week by this plan which had existed for two or three years.]

ALTERATIONS OF SENSIBILITY OF THE VAGINAL CANAL, OR OSTIUM VAGINÆ.

Spasm and Hyperæsthesia: Vaginismus.—In making an examination by means of the finger, it may be found that the entrance of the vagina is extraordinarily sensitive, the slightest touch giving rise to great discomfort; and in some cases this is so extreme that an examination is hardly practicable. This condition must not be confounded with tenderness to the touch of the more ordinary kind, which may proceed from inflammation or abscess of the vulva, from cancerous inflammation, from pelvic inflammation, gonorrhœal or syphilitic inflammations, etc., in most of which cases the tenderness is quite unlike that now under consideration. Nor must it be confounded with excessive sensi-

tiveness of the uterus itself, such as is present in acute flexion of that organ (see Flexions). The condition in question is really a hyperæsthesia of the part, dependent not always on the same cause. It has been described by various names. Marion-Sims, Debout, and others, have of late years redirected attention to it, especially as a cause of sterility, and as interfering with sexual intercourse. The parts are more sensitive to a slight touch than to more rough handling. The extreme sensitiveness is mostly accompanied by a painful contraction of the vaginal sphincter—hence the terms “vaginal spasm,” “vaginismus,” which have been applied to it. The difficulty experienced in introducing the finger is dependent on the spasmodic contraction of the muscles. It has been described as most commonly present in individuals whose nervous system is generally in an easily excitable state. Dr. Ferguson believed that in cases of “irritable uterus,” one of the seats of this neuralgic malady was the vagina itself, this latter being so exquisitely tender as to render intercourse intolerable. In Scanzoni’s opinion, the disorder especially accompanies anteversions, retroversions, flexions, or actual changes of the uterus itself, and that it is not rare in connection with spasmodic affections of the urethra, bladder, or rectum. Sir J. Y. Simpson has in some instances found true small nodular neuromata under the mucous membrane.

The affection may not be due to the same cause in all cases. I am of opinion that the essence of the disorder is a local alteration or irritation of the nerves at the spot itself.

In one case which occurred under my own observation, the patient was a lady who had had two children: for some months there had been extreme sensibility of the ostium vaginæ, intercourse being impossible. On careful examination I found that the sensibility was actually limited to one little spot near the posterior commissure, over an area of less than one quarter of an inch. The case was cured by paring away the mucous membrane over the spot, and bringing the edges together by fine silver sutures. Here it seemed probable that the hyperæsthesia was dependent on laceration and inflammation of some of the nerve fibres during labor. This hyperæsthesia is I believe not unfrequently due to partial laceration of the hymen. A very marked case of the kind recently came under my notice, in which this was evidently the cause. The slightest touch gave rise to great suffering, and intercourse had been found

to be well-nigh impossible. Here the hymen was very thin, very easily stretched upward by pressure, returning to its original shape on the pressure being withdrawn.

Treatment.—In the treatment of this affection, the first object in view should be to remove its cause. The condition of the vulva, of the vagina, and of the uterus, must be severally explored, and any disorder discovered rectified.

It is probable that if the cases were carefully examined, many would be found susceptible of the explanations mentioned above, and therefore capable of being similarly treated, namely, by removal of the affected portion of mucous membrane by the knife, or obliteration of the sensitive part. Other cases may be cured by rather freely incising the mucous membrane at the situation of the hymen, and carefully packing the passage with oiled lint so as to prevent adhesions, subsequently employing occasionally a dilator to maintain the aperture the proper size. Marion-Sims* has recommended a glass speculum to be kept in the passage to prevent adhesions: this dilator to be worn for some little time. Scanzoni recommends two or three weeks' dilatation, to be effected by a series of graduated glass specula, used for half an hour to an hour at a time every two or three days; and afterward avoidance of intercourse, hot hip-baths, and applications of belladonna.

In cases where no limited local derangement can be detected the general treatment is a matter of great moment. Regular, temperate living, exercise in the open air—especially horse exercise—use of the sponge-bath, friction of the skin, cultivation of the bodily rather than of the mental powers, these measures are not subsidiary, but of primary importance in the treatment, and the patient cannot be fully restored to health if these simple precautions be neglected.

[This subject is a matter of so much practical importance that I need not apologize for the long extract here made from "Clinical Notes on Uterine Surgery," by Dr. J. Marion-Sims, p. 318:

To examine a case of suspected vaginismus, place the patient on the back with the legs flexed, and gently separate the labia. The patient will at once manifest symptoms of alarm and agitation—not that we hurt her, but she feels an indescribable, insuperable dread of being hurt. The gen-

* "Obst. Trans." vol. iii.

tlest touch of the ostium vaginae, with the finger, a probe, even with a feather, or bit of cotton on the end of a probe, produces great agony. The sensitiveness is at all parts of the vaginal outlet. It is very great at and near the meatus urinarius on each side, where the hymen takes its origin; and greater still near the orifice of the vulvo-vaginal gland; but often the most sensitive point is at the fourchette, where the hymen projects upward. The whole outer face of the hymen is sensitive, but it is more so along its reduplication or base, just in the sulcus between it and the vagina.

But while the outer face of the hymen and the adjacent parts are so sensitive, the inner is not. If we turn the patient on the left side and separate the nates and vulva, so as to pass a sound through the hymen, without touching its outer surface, and then make pressure with it laterally, or backward on the inner or vaginal aspect of this membrane, we will not find there any abnormal degree of sensitiveness.

Touching the outer surface of the hymen in any portion of its reduplication produces not only pain, but an involuntary spasm of the sphincter muscle, both of the vagina and anus. In some instances the sphincter ani feels almost as hard as a ball of ivory; and one of my patients supposed it to be a tumor that would require exsection.

Vaginismus is usually uncomplicated with inflammation; but I have met with several cases in which there was redness or erythema at the fourchette. Usually the hymen is thick and voluminous, and when the finger is forced through its free border it feels as if encircled by a fine cord or wire.

The treatment consists in the removal of the hymen, the incision of the vaginal orifice, and subsequent dilatation with vaginal plug.

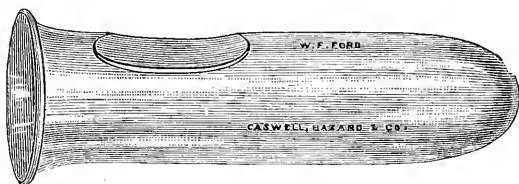
Placing the patient (etherized) on the back, with the thighs well flexed over on the abdomen, the orifice of the vagina is to be forcibly dilated by fingers or instrument. Then seize the hymeneal membrane with a delicate pair of lock-forceps just at its junction with the urethra on the left side, and putting it on the stretch, clip with properly curved scissors till the whole is removed in one continuous piece.

Then pass the index and middle fingers of the left hand into the vagina, separate them laterally, so as to dilate it as widely as possible, putting the fourchette on the stretch; then with a scalpel cut through the vaginal tissue on one side of the mesial line, from above downward, terminating at the raphé of the perineum. This cut forms one side of

a Y. Then pass the knife again into the vagina, still dilating with the fingers as before, and cut superficially in like manner on the opposite side from above outward, uniting the two incisions at or near the raphé, and prolonging them quite to the perineal integument. Or these vaginal incisions may be made one on each side of the raphé and parallel with it, terminating a third of an inch or more apart, on the perineal surface.

The bleeding, usually trifling, is arrested by the introduction of the vaginal plug. I have had two cases where it was necessary to resort to the iron cotton tampon for 24 hours. Generally the dilator is introduced at once. It is made usually of glass, sometimes of metal or ivory. I prefer glass because it is easily kept clean, and being transparent, we can see the cut surface, and indeed the whole vagina, without removing it. Its introduction is attended

FIG. 215.



with a sense of soreness, but with none of the peculiar agonizing suffering so characteristic of the original disease.

The patient will generally wear the dilator two or three hours in the morning and two or three in the afternoon or evening; sometimes for a longer period. I have known a few who wore it six or eight hours at a time. I have often been astonished at the rapidity with which the cuts sometimes healed, the case being seemingly facilitated by the pressure of the glass tube.

I direct the dilator to be worn daily for two or three weeks, or longer, or till the parts are entirely healed and all sensitiveness removed.

The dilator is a tube about three inches long, slightly conical, open at one end, closed at the other, and an inch and a quarter or an inch and a third or more in diameter at the largest part, near the open or outer end.

There is a depression or sulcus on one side for the urethra and neck of the bladder (Fig. 215). The outer open end

allows the pressure of the atmosphere to assist in retaining it easily in the vagina.

It is held in place by a T bandage. When closed at both ends, it is much more difficult to retain it *in situ*. The depression for the urethra is very important, for I found that a perfectly round cylinder, worn for three or four hours, always injured the urethra; and, moreover, this urethral depression assists the self-retaining power of the instrument.

From personal observation I can confidently assert that I know of no disease capable of producing so much unhappiness as vaginismus, and I know of none that can be cured so easily and so safely.

My father and myself have operated successfully in more than a hundred cases, and since he first published his views on the subject the operation has been accepted and performed everywhere with uniform success.]

FISTULÆ.

There may be an abnormal communication between the bladder and vagina, *vesico-vaginal fistula*, the aperture varying much in size and in shape. In some cases the whole of the base of the bladder may be destroyed, or this together with the urethra. The perforation is generally an effect of the long pressure of the head during labor. In some rare cases a communication has been found between the bladder and the cervix of the uterus (*utero-vesical fistula*). Lastly, we have cases in which there is a perforation of the vagino-rectal septum. These are cases of *recto-vaginal fistula*.

Great misery and distress are produced by these unnatural openings, and although in themselves not grave, they are most troublesome and annoying to the patient.

Treatment of Vesico-vaginal Fistula.—There is no department of surgery in which such marked improvement has been made of late years as in the treatment of this, which is the most common of the fistulæ connected with the generative organs. Cases of vesico-vaginal fistula are now, almost without exception, capable of cure, though great perseverance and patience are requisite in many cases to obtain success. To Dr. Marion-Sims is due the merit of introducing the use of metallic sutures instead of sutures of thread or silk, which were formerly used, for the purpose of bringing

the edges of the wound together, and of an improved speculum, by which latter instrument access is better obtained to the part involved, and the manipulations thus greatly facilitated. Mr. Gossett of London in 1834, published a case illustrative of the advantages of metallic sutures, but his practice never attracted attention, or led to its adoption by others. Since Dr. Marion-Sims introduced the use of the "silver suture," other modifications of the operation, the use of clamps, buttons, bars, etc., as assisting in holding the edges of the wound together, have been adopted, but latterly they have been found superfluous, and it appears that the really important part of the improved operation is the greater nicety with which the edges of the fistulous opening can now be pared, and the newly cut surfaces kept in close apposition. The sutures now employed are generally of wire, but some operators prefer silk.

The operation, as now practiced by several distinguished physicians and surgeons, is essentially the same, particular points being more insisted on by some than by others. The most complete work on the subject is Dr. Emmet's,* in which are recounted a large number of cases, many of them of great difficulty. Dr. Emmet attaches much importance to the preparatory treatment, consisting in many instances of preparatory operations, the object of which is to free the soft parts which have to be pared from cicatricial adhesions by bands, which bands prevent the pared edges from coming together properly. To the method of performing these preparatory operations Dr. Emmet attaches much importance. Cicatricial bands or resisting strictures are to be cut through by scissors instead of the knife, for the reason that the cut of the scissors heals more slowly. There is also less risk of pyæmia. The cutting asunder of these interfering bands may frequently be done at the time of the actual operation, the fistula closing before the wounds inflicted by the side of the fistula have had time to granulate and contract. But the wearing for some days of a glass speculum after cutting through the adhesions and bands is frequently advisable, as in this way previously contracted surfaces are permanently lengthened. Dr. Emmet also insists on the use of baths, injections, etc., for producing a healthy condition of the mucous membrane. Some days may have to be spent in this prepara-

* "Vesico Vaginal Fistula," 8vo., p. 250. Wood & Co., New York, 1868.

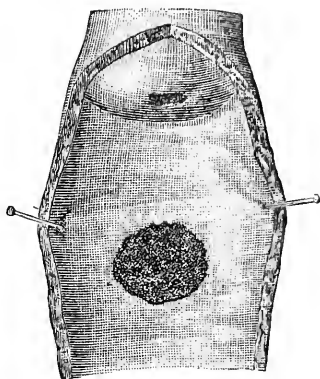
tory treatment. Dr. Emmet's recommendations are most useful and practical. He uses scissors of various curves for paring the edges. In the work of Dr. Savage also will be found very concise directions for the operations, with drawings of the various instruments required. Before the operation the bowels must be thoroughly evacuated. For the operation itself, the patient is placed on the back, as in the operation of lithotomy, on the side, with the body partially pronated, or on the hands and knees. The two former methods allow of an anæsthetic being easily given; the latter method is the best in difficult cases. The fistula is exposed by simply separating the labia by the fingers, and retracting the perineum by the Marion-Sims speculum. The edges of the fistula are next pared by knives or by scissors adapted for the purpose. These require to be bent at different angles and curves so as to reach easily all parts of the circular space constituting the fistula; as regards the manner in which the paring is effected, the edges should be bevelled, the operator removing thus the mucous coat of the vagina and the muscular tissue of the bladder, but not the mucous lining of the bladder. The effect of this is that the amount of raw surface offered for adhesion when the lips are brought together is increased. Every part of the border of the fistula must be pared. The paring effected, a series of interrupted sutures are introduced; they pass from a quarter of an inch outside the edge of the wound, through the thickness of the muscular coat of the bladder, close to the edge of the cut surface, stopping just short of the mucous membrane; the same on each side. Avoidance of the mucous coat of the bladder is a point insisted on by all. The number of sutures varies according to the size of the opening, but it is a point much insisted on by Dr. Marion-Sims, that they should be numerous and close together. The sutures first used have been generally of silk. When these temporary silk sutures have been all introduced, the ends, which are hanging free, are used to draw through the silver wire permanent sutures. The edges of the wound are then carefully brought together by tightening the sutures one after the other; the ends of the wire sutures are then twisted up close to the edge by the fingers or by forceps, and the wire is then cut off close to the edge of the wound.

In the performance of the operation, care is required to

and exposes it fully to view. Fig. 216 shows the manner of holding the speculum when in use.

To illustrate the principles of the operation let us take the simplest case that could occur. Fig. 217 represents a vesico-vaginal fistula in the vesico-vaginal septum, about midway between the urethra and cervix uteri, large enough to admit the end of the finger. In scarification the anterior border is hooked up with a delicate tenaculum, pulled forward, put well on the stretch,

FIG. 217.



and clipped with scissors straight or slightly curved on the flat, till the whole circumference of the fistula has been freely denuded. The cut surface is bevelled down to the edge of the lining membrane of the bladder, and is about $\frac{3}{16}$ of an inch wide, sometimes more. If the tissue is abundant there is no danger of removing too much. If it is scanty we can get fresh surface enough by simply splitting the vaginal border without removing any tissue whatever. For this purpose, we use a delicate scalpel with a long handle. We sometimes use the scalpel for denudation. But the scissors are generally preferable. We need really but two pairs of scissors, the sharp pointed, slightly curved at the point, for cutting wire, and the gently curved on the flat for scarification.

Fig. 218 represents the borders of the fistula after denudation with one suture already introduced, and the beginning of the second. To introduce the suture, hook up the anterior border of the fistula with the tenaculum just at the vaginal edge of the denuded portion, pull it forward, hold it firmly, and enter the needle about $\frac{3}{16}$ of an inch from the outer edge of the scarified part, and push it diagonally through the vaginal septum, and bring the point out at the junction of the vesical membrane with the denudation. The tenaculum (or a blunt hook) is then placed under the projecting point of the needle, to support, elevate, and pull it forward when it is seized with the forceps, pulled through, and drawn out of the vagina. Then

with the forceps pass the same needle through the posterior border of the fistula, entering it at the junction of the vesical mucous membrane with the denudation, and bring the

FIG. 218.

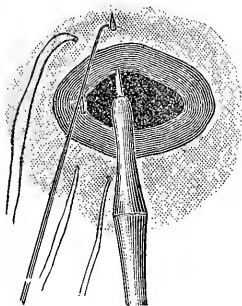
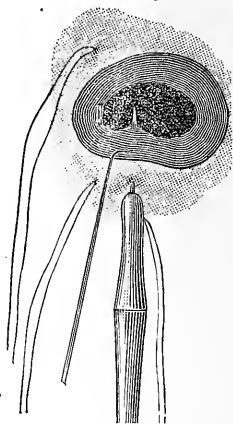


FIG. 219.



point out on the vaginal surface beyond the distal edge of the denuded surface at a point corresponding with its entrance anteriorly. In this manœuvre the posterior edge of the fistula is to be hooked up and steadied with the tenaculum for the introduction of the needle, and then the point of the needle is to be supported by the tenaculum as before, till it is caught and withdrawn by the forceps, as seen in Fig. 219.

FIG. 220.

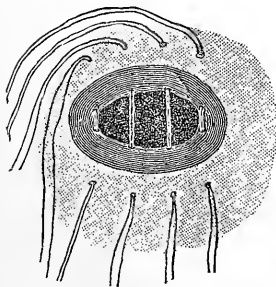
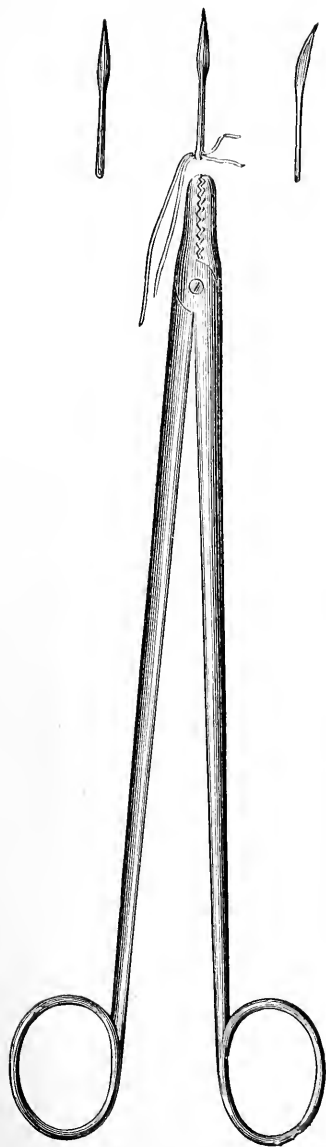


Fig. 220 shows the four sutures introduced, the number required for an opening of the size represented. They are seldom more than $\frac{3}{16}$ of an inch apart. The two outer or end sutures are to be passed, as shown in the figure, just at the edge of the lining membrane of the bladder;

not farther to the right or the left.

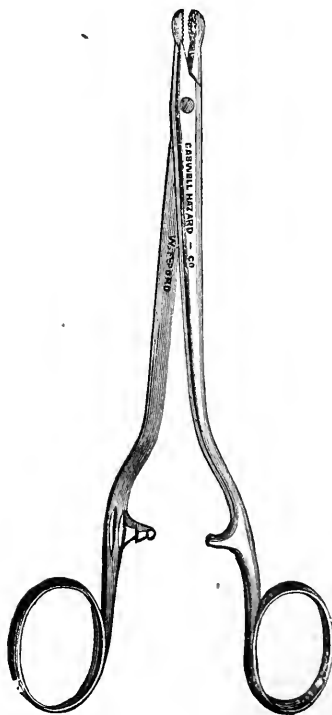
The suture is pure silver wire, No. 28 or 29, as may be preferred for the special case. Some surgeons introduce the silver wire at once. But we prefer to pass first

FIG. 221.



a double ligature, and hook the bent end of the wire over the loop, and then with this draw the wire into position, when all is ready for completing the operation. By this plan the wire never gets kinked or knotted. The needles are about an inch long, and straight, or slightly curved near the point. My father formerly used the spear-pointed needle, but for many years he has had them pointed like the needle of the hypodermic syringe.

FIG. 222.



He formerly used forceps like Fig. 221. But for many years past we use forceps with locked handles. (See Fig.

FIG. 223.



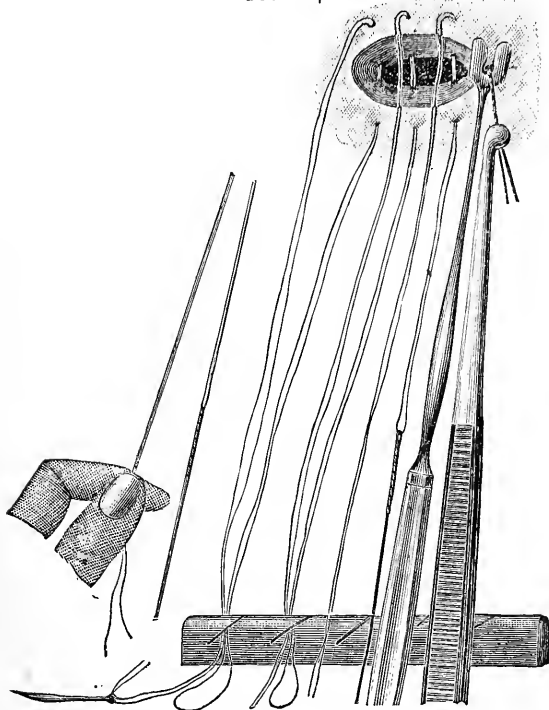
222.) As we pull on the distal end of the ligature to draw the suture through, there is some danger of its lacerating the tissues, and we often use a fork (Fig. 223a) to push up and support the distal end of the thread which glides over it as over a pulley. Suppose all the ligatures have been passed; then bits of silver wire ten or twelve inches long, bent at one end, are to be hooked one over each loop of ligature and securely fastened. The one on the upper or right side of the vagina is to be pulled in place and tightened first. Then the next, and so on till they are all secured. Fig. 224 represents the method of twisting the wire. The wire is caught by lock-forceps an inch or more from the fistula, drawn up perpendicularly from the surface of the vagina, put well on the stretch, and then with the fulcrum (Fig. 223b) the anterior half of the wire is pushed back and bent over the line of union and firmly held there, while with the forceps it is pulled in the direction parallel with the handle of the fulcrum. Hold the fulcrum firmly with the left hand while with the right the forceps are rotated till the wire is neatly twisted up to the vaginal surface. Then remove the fulcrum, and cut off the twisted wire about a half or three fourths of an inch from the surface. And, placing a tenaculum or blunt hook against the wire at the junction of the twist and loop, bend the twisted portion flatly down on the surface of the vagina backward, forward, or laterally, as the case may require. Fig. 226 represents two of the wires twisted and bent forward and cut off.

Fig. 227 represents the appearance of the fistula when the operation is completed.

My father has often operated on simple cases like the one now described, and allowed the patients to walk about

as if there had been no operation. I now recall a case of this class which was brought to the Woman's Hospital in 1873, when I was his assistant there. His beds were all full. And there were so many applicants that this poor woman had to be put off indefinitely. The fistula was favorable for cure. So he operated, applying five silver sutures, and

FIG. 224.



sent her home with instructions to return in a week. She attended to her ordinary household duties all this time, and when she returned the cure was found to be perfect, and the sutures were removed. The first time he did the operation in this way was in 1855, the first year of the opening of the Woman's Hospital. The patient, though 56 years old, was perfectly cured. But this is not the plan to be pursued generally. We put the patient to bed, and introduce the

self-retaining sigmoid or Sims catheter. Fig. 228 represents the self-retaining catheter. Instead of this, my father

FIG. 225.



has for many years been in the habit of using a Nelaton catheter cut to the length of three or four inches, or a common piece of rubber tubing of appropriate size and length. It is light and possesses great advantage over the metallic catheter when the urethra is irritable. Of course the catheter when used must be kept clean, and be cleaned daily.

The sutures are usually removed on the eight day after operation. This requires some delicate manipulation. The patient is to be placed in the Sims position, and the Sims speculum is to be introduced. Then seize the twisted end of one of the sutures with lock-forceps, and raise it up perpendicularly from the vaginal surface; put it well on the stretch till the loop of wire is plainly seen, then with sharp-pointed scissors (Fig. 229) be sure to pass the point of one blade within the loop, and clip it and pull it out.

It is unfortunate if in a hurry the wire is cut off in the twisted part above the loop. For then it worries the patient if we have to poke about with a blunt hook to bring the loop again to the surface.

When the fistula is longitudinal, of course the sutures are to be passed transversely. And this is done with the same facility as in the first case.

The sutures are to be removed about the eighth day.

The bowels are to be constipated for three or four days. The diet should be moderate, but not greatly restricted.

To cure vesico-vaginal fistula with such facility, and such certainty, and with absolutely no risk to life, is one of the grandest surgical achievements of modern times.]

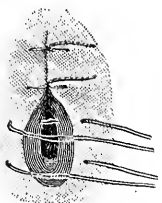
The after-treatment requires special attention. The patient is placed on the side in bed, where she must remain

for some days. Accumulation of urine in the bladder is generally prevented by keeping a catheter in the bladder, through which the urine escapes, as fast as it enters this cavity, into an india-rubber bag placed outside; or, still better, by an india-rubber pipe, to a suitable receptacle beneath. The catheter used is of a sigmoid form; the best is one of flexible metal, which is self-retaining. The cath-

FIG. 227.



FIG. 226.



ter should be changed night and morning, cleaned carefully before reintroduction, and carefully watched to see that it does not become obstructed. Some operators, as Dr. Meadows, omit this continued use of the catheter altogether, and it is stated that the cases do equally well. The bowels are prevented from acting for a period of ten days or a fortnight, small doses of opium being given periodically for this purpose. The sutures are removed

FIG. 228.



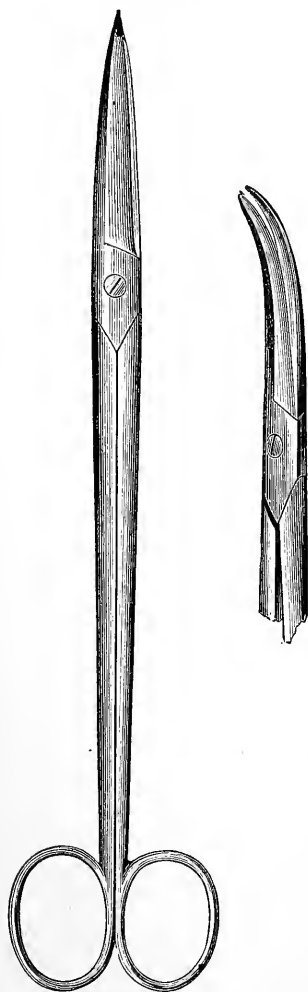
about the tenth day. In removing the sutures, each separate stitch is slightly retracted by the forceps, and then cut across on one side by means of sharp-pointed scissors.

When the base of the bladder is entirely gone, it is necessary to close the vagina completely, the patient afterward menstruating through the bladder.

If the fistulous communication between the bladder and vagina be due to cancerous ulceration or to syphilitic ulceration still progressing, operative measures are quite inapplicable.

The instrument required for the operation must be specially constructed for the purpose.

FIG. 229.



For preparatory operations long, blunt-pointed slightly curved scissors, and the glass plug. For the operation itself the duck-bill speculum in various sizes, or metallic, slightly flexible retractors; tenaculi with long handles, fine points, and slightly hooked in shape at the end; a blunt hook of copper, plated, to act as a probe and otherwise. Scissors (following Emmet's plan) of various curves, right and left, so as to enable the operator to pass all round the fistula, or knives with short blades set on long handles at various angles, or one knife set on a universal ball-socket joint. Short needles to carry silk, of various curves, a holder to insert the needles, or Simpson's self-feeding wire-carrying set of curved needles, with handle before mentioned, may be employed instead of these silk-carrying needles. Sponge-holders with long handles, and furnished each with a minute piece of sponge. A pair of long dressing forceps. Forceps with strong flattened points to twist the sutures; silver wire of various thicknesses. Sims's "shield" of copper plated, which enables the operator to steady the fistula and tighten the sutures. Catheters. Delineations of these various instruments will

be found in Dr. Emmet's, Dr. Savage's, and other works.

TREATMENT OF RECTO-VAGINAL FISTULA.

These cases do not, as a rule, present the same difficulty in regard to treatment as cases of vesico-vaginal fistula; they are capable of being treated on precisely identical principles. The application of caustic is frequently sufficient to produce closure of the aperture. Careful paring of the edges and use of metallic sutures, can be had recourse to, if other more simple measures fail. The treatment after the operation chiefly consists in keeping the bowels confined, by means of opium, for some days. *Fistulæ* due to cancerous ulcerations are not remediable by operation.

For the relief of vesico-uterine fistula, the operation of closing the os uteri and allowing the patient to menstruate through the bladder has been practiced. It is perhaps the least of the two evils to leave the patient thus. Mr. James Lane records a most curious case, in which, notwithstanding closure of the os by operation, the patient became pregnant. Probably the closure was not complete. Various interesting and unusual cases will be found in Dr. Emmet's work.

TUMORS GROWING IN OR FROM WALLS OF VAGINA.

Fibroid tumors are sometimes met with in the wall of the vagina. Thus Sir J. Paget * removed by enucleation a hard fibrous tumor, the size of a hen's egg, from the wall of the vagina in front of the os uteri, which had been the cause of profuse losses of blood; and occasionally small growths of a similar nature are found more external to the vagina near the uterus. Again, we have the *fibroid polypus* of the vagina, attached by a pedicle, and hanging freely in the vaginal canal, and the *mucous polypus* of the vagina. These cases are rare.

Fatty tumors growing between the rectum and vagina have been met with.†

Cancer of the vagina presents itself in two forms. We find in some cases cauliflower-like growths on the free surface, generally in association with like growths on the cervix uteri. In others the vaginal wall is found in a thickened,

* *Med. Times and Gaz.* Aug. 17, 1861.

† See Dr. D. D. Davis's work, vol. i., p. 137. In the works of Dr. West and Dr. M'Clintock also will be found related cases of the somewhat rare affections above described.

hard, irregular, nodular condition. Any part of the vaginal wall may be affected. Vesico-vaginal fistula is often a result of ulceration of a cancerous deposit in the roof of the vagina.

Treatment of Tumors Growing in or from the Vaginal Walls.—The fibrous tumors growing in the vaginal wall, or hanging by a pedicle from any part of the same, are only amenable to surgical treatment. They interfere with coition, and require removal. The polypoid tumors are best removed by the écraseur. If near the bladder, care should be taken not to wound this viscus in removing the tumor. A more careful operation by the knife or scissors is required when it is decided to remove a tumor which is larger, and has a wider basis of attachment.

The cystic tumors of the vagina, if pedunculated, are treated by excision. When this is not the case, the cyst may be tapped and injected, or it may be dissected from its attachments, if not of considerable size. The latter plan is, on the whole, the best, as the cyst will refill subsequently, when simply tapped. [A sure plan of curing these vaginal cysts is to split them widely open, keep the incised edges apart for a while, and then let them heal from the bottom by granulation.]

In the treatment of cancerous tumors of the vagina, the same rules are applicable as in cases of cancer of the uterus.

CHAPTER LII.

DISEASES OF THE URETHRA AND BLADDER.

DIAGNOSIS.

DISORDERS of MICTURITION considered in Relation to the Diagnosis of their Causes.

DISEASES of the Urethra and Bladder—Chronic Inflammation of Urethra—Treatment—Stricture of Urethra—Treatment—Vascular Tumors of Meatus—Treatment—Eversion of Urethra and Bladder—Treatment—Retention of Urine—Use of Catheter—Chronic Cystitis—Treatment—Polypus of Bladder.

DIAGNOSIS.

The disorders of the bladder and urethra are numerous, and occasionally very serious in their results. Their diag-

nosis is, though really simple, often attended with difficulty, for the reason that the symptoms are not unfrequently of a very misleading character.

The physical exploration of the urethra and bladder is easy. The urethral orifice can be readily seen, the canal can be easily explored by means of a sound or a catheter, and its patency tested. The bladder can be explored by the finger from the vagina in such a way as to test its thickness and density and the presence of foreign bodies—*e.g.*, calculi—within it. The bladder can also be accurately explored from within by means of the sound or the catheter.

In case of obscurity of diagnosis these several methods of examination should be had recourse to. Very easily recognizable and important conditions frequently exist for a long time in consequence of omission of such examinations.

The *disorders of micturition* constitute the most important of the *symptoms* of diseases of the bladder and urethra. We proceed to consider these symptoms.

MICTURITION DIFFICULT (DYSURIA).

Pain is readily confounded with difficulty, and *vice versâ*.

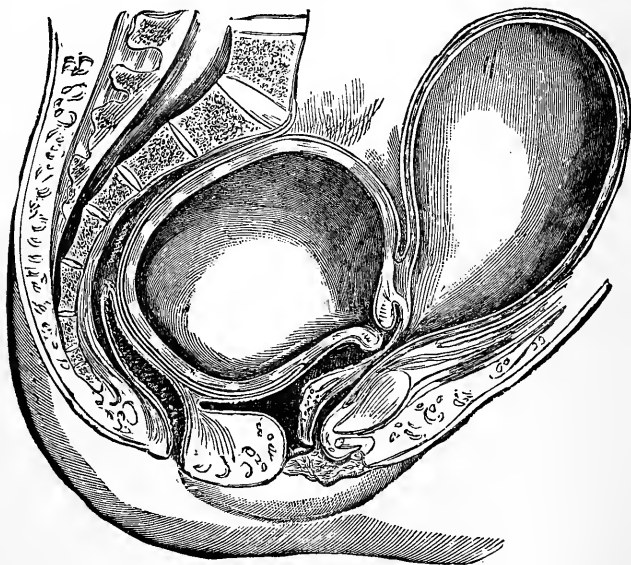
Difficulty in micturition proceeds from one of two causes: either the bladder is incapable of expelling its contents; or, the exit of urine is prevented by some abnormal condition of the urethra.

The *bladder is inefficient* when its muscular fibres are paralyzed, or, which amounts to the same thing, when they do not act. *Paralysis of the walls of the bladder*, in this sense of the term, is not a common affection; it is witnessed in the last stage of low fever—in puerperal fever, *e.g.*,—and it may be the result of long-continued distension of the viscus, whereby the muscular fibres have their contractility destroyed or lessened, as during parturition.

The cause of difficult micturition in cases of this kind would be tolerably apparent, except when the paralysis extended to the sphincter also, when the constant dribbling away of urine would render the distended condition of the bladder less obvious. Some years ago I saw a case of retention of this kind on the second day after labor. The bladder was very full, but the slight occasional escape of urine very nearly obscured the real state of the case. Cases of a more chronic nature sometimes present themselves: the

bladder is largely distended, simulating abdominal tumor, and yet, the escape of urine being tolerably regular, attention is not called to the condition of the bladder itself. Lamentable results have followed under such circumstances from want of correct diagnosis. In cases of paraplegia, there is paralysis of the walls of the bladder, which, however, is more often present toward the close of the affection, the paralysis at first extending, in a marked degree, only to the sphincter. Chronic cases of paralysis of the bladder are

FIG. 230.



characterized by the offensive condition of the urine, due chiefly to partial constant retention of the secretion within this organ.

In cases of *organic disease of the bladder—cancer, e.g.*,—there is frequently difficult micturition accompanied with bloody urine; micturition is also both frequent and painful. In another more rare disease of the bladder, viz., *polypus*, the free passage of the urine may be prevented by the polypus.

Organic Stricture of the Female Urethra.—In cases where the difficult micturition is due to this cause, the difficulty is

more or less persistent, though liable to exacerbations; the bladder is evacuated slowly, the stream is small, pain is at times present, and the difficulty, as a rule, slowly increases as time advances. The history of the case might be of some assistance in the diagnosis; but an examination is of course essential. *Vascular tumor of the urethra*, or *polypus of the urethra*, may be the cause of difficult and painful micturition. In the case of polypus of the urethra, there is difficulty and straining in micturition, and there may be occasional passing of blood. *Cysts or other tumors of the vagina*, if growing near the urethra or neck of the bladder, may produce difficult micturition. *Inversion of the bladder*.—This rare condition will be mentioned further on, in connection with “painful” micturition, but it also occasions “difficulty.”

Displacements of the Uterus.—Connected as the neck of the bladder is with the uterus, dislocations of the latter involve a certain amount of displacement of the former. *Retroflexion or retroversion of the uterus*, and especially of the *gravid uterus*, produces difficult micturition in a marked degree. The bladder is emptied with great difficulty in such cases; the urethra, as shown in the annexed drawing (Fig. 230), is thrust upward behind the pubes, elongated, stretched, and pressed upon posteriorly by the uterine tumor. In early pregnancy, difficult micturition, persisting for some time and increasing, would lead us to suspect retroflexion or retroversion—an important fact, for, in order to treat these cases satisfactorily, the early recognition of their true nature is necessary. The other signs of retroversion of the gravid uterus are, flattening of the hypogastric region, involuntary straining or tenesmus, dragging in the loins and groins, constipation, etc.

Enlargement of the uterus, from the presence of *fibrous or other tumors*, may also produce difficult micturition; indeed, this symptom is very commonly observed in various stages of this affection. In cases of fibrous tumor of the uterus, a curious phenomenon is sometimes observed, not, probably, peculiar to these tumors, namely, the manner in which ability to evacuate the bladder is affected by the position of the body. Thus, a lady who consulted me had had a large fibrous tumor of the uterus for seven years. Of late there had been occasional difficulty in micturition, which she had always been able to overcome by lying flat on the face. Here the uterine tumor was movable, and when the patient

threw the body forward the pressure of the uterine tumor was removed from the vesical outlet. Sir C. M. Clarke records a case in which the patient was capable of voiding small quantities occasionally if she lay on the back with the pelvis a little raised.*

During the descent of the foetal head through the pelvis in labor, there is difficult micturition, the canal of the urethra being partially or completely occluded by pressure.

In *prolapsus of the bladder* (cystocele) the same symptom is observed; the position of the urethra is here precisely the opposite to that in retroflexion of the uterus, the canal being bent downward instead of upward. In these cases of cystocele the patient evacuates the bladder by simply pushing the tumor upward; this restores the urethral canal nearly to its normal position.

Tumors of the ovaries, as long as they remain in the pelvis, frequently occasion great difficulty in micturition; when, in process of growth, they rise above the pelvic brim, the pressure on the urethra is removed, and, so far as the symptom now alluded to is concerned, the patient improves.

In short, difficult micturition may be caused by any tumor in the pelvis capable of exerting pressure on the canal through which the contents of the bladder are evacuated. It is characteristic of most of those cases in which the difficulty of micturition depends on pressure by tumors, etc., within the pelvis, that the difficulty is more or less chronic, and will be found on inquiry to have lasted for some time, unless in cases where the pelvic tumor is of very rapid growth. An instance of the latter exceptional kind we have in cases of *peri-uterine hæmatocele*, where blood rapidly effused in the neighborhood of the uterus forms a considerable tumor, and, in consequence, gives rise to difficult micturition.

MICTURITION PAINFUL.

Here pain, during or in consequence of micturition, is the prominent symptom. There may be difficulty; but the pain attending it is the circumstance chiefly attracting attention.

Micturition may be painful by reason of *abnormal condi-*

* *Op. cit.*, p. 254.

tions of the urine itself, of the bladder, of the urethra, of the vaginal mucous membrane, or in consequence of dislocations produced by affections of other adjacent organs.

Urine.—The morbid conditions of the urine alluded to are undue acidity or alkalinity, presence of gravel, mixture of the urine with blood, in cases of Bright's disease, in cases of calculus of the kidney, cancer of the bladder, or from any other cause. If the urine be of an irritating quality, it often produces excoriation of the vaginal outlet.

Bladder.—Cystitis, chronic or acute, is accompanied with pain during micturition, and there is often a great degree of frequency at the same time. In these cases of cystitis, pain is present more or less constantly, as well as during the passage of the urine from the bladder. Cystitis itself may arise from the presence of a stone in the bladder, or from partial or complete retention of urine. In cases of calculus, there is pain on motion and at variable times; the pain during micturition is not considerable, as a rule, but there is generally pain just at the end of the process. The painful micturition in cystitis depends either on the condition of the urine, which is often very irritating, or on the associated inflammation of the urethra.

In *malignant disease of the bladder*, the pain following micturition is a marked symptom, but it is associated with pain at other times also, with frequency of micturition, with turbidity of the urine, occasional presence of blood, etc. The disease in question is rare; the affection with which it would be most liable to be confounded is organic disease of the kidneys. To settle the point, an examination of the bladder would be necessary.

Urethra.—Painful micturition is, in the majority of cases, dependent on morbid conditions of the urethra. In urethritis, whether of specific character or not, there is pain of a burning character (scalding, as it has been appropriately termed), which is more or less constant; but during the passage of the urine it is very intense: micturition is not only painful but very frequent. The suddenness of such an attack is, as a rule, characteristic of the presence of an inflammatory condition of the urethra. The symptoms of specific inflammation of the urethra produced by the gonorrhœal virus are not, however, always characteristic. There is generally great pain in micturition; this pain is of a burning character, and is associated often with a spasmodic contracted state of the sphincter, to which the pain experi-

enced is partly attributable. The presence of a urethral discharge, and the moral evidence attainable, would assist us in coming to a conclusion (see p. 113). In cases of gonorrhœal inflammation of the urethra, the stage of acutely painful micturition does not extend usually beyond two or three days; it attends the outset of the inflammation, but is less marked subsequently. We also find inflammatory conditions of the urethra as the result of mechanical injury, as from masturbation, too frequent or violent sexual intercourse; or the inflammation may be the result of vesical irritation, as in cystitis or calculus.

An obstinate form of chronic urethritis, unconnected with gonorrhœa, has been noticed by Dr. Ashwell and by Dr. M'Clintock, as giving rise amongst other symptoms to painful and very frequent micturition. There is pain also irrespective of micturition, and pain is produced by passing a catheter. The condition appears to be a chronic inflammation of the mucous membrane lining the whole of the canal.

In cases of vascular tumor of the meatus the pain is, as a rule, very severe, so considerable indeed that the patient dreads the process of evacuating the bladder. Painful micturition, extending over a considerable time, in a middle-aged woman, should lead us to suspect the presence of this affection. Examination of the meatus would then be necessary. In children, *eversion of the mucous membrane of the urethra, or inversion of the bladder itself* is in some rare instances a cause of difficulty and pain in micturition.

Another class of cases of painful micturition is that in which the bladder and urethra are unaffected, but, the *ostium vaginæ* being in an inflamed condition, the passage of urine is productive of pain from the contact of the latter with the inflamed surface. Certain forms of leucorrhœa are associated with painful micturition, in consequence of the existence of this inflammatory condition of the outlet of the vagina. When the upper and inner part of the thighs are excoriated by contact with irritating discharges, such as are present in the ulcerative stage of cancerous disease of the uterus, and under some other circumstances, the patient will lead us to infer that there is painful micturition, the pain arising in the latter case also from contact of the urine with a raw inflamed surface. The immediate neighborhood of the outlet of the urinary meatus may be inflamed as the result of masturbation.

Alterations in the position of the uterus, by which the urethra is drawn out of its place, alterations of the bladder itself, or tumor of adjacent organs, may produce difficulty in micturition, as already pointed out. The difficulty is generally accompanied with more or less pain; but the pain is not, as a rule, the prominent symptom, though it may be so in a few exceptional cases. With a little care in cross-examination, it may generally be made out whether the pain or the difficulty came first in order; and this point is of importance in reference to the diagnosis.

MICTURITION FREQUENT.

There is, perhaps, no one diseased condition of the vagina, uterus, bladder, or adjacent organs, which may not, at one time or other, give rise to frequency of micturition, to say nothing of the varying conditions of the urine which may occasion the same phenomenon. Frequency of micturition can hardly, then, be considered as characteristic of the presence of any one diseased or altered condition.

Frequent micturition is often an early sign of pregnancy. During the first two months of gestation in primiparæ it is very generally present. Toward the latter end of pregnancy, also, it is pretty frequently observed. In hysteria, frequent micturition is a symptom often present during the attacks.

Displacements of the uterus may occasion frequent micturition; anteflexion of the uterus almost invariably produces great frequency of micturition; difficulty and pain during micturition may also be produced thereby. *Ovarian* or other pelvic tumors occasion frequent micturition, owing to pressure on the bladder, as before remarked. Urinary difficulties are more frequent during the early than the later stages of these tumors; when larger, they rise out of the pelvis, and the patient suffers less. Frequent micturition may be due to *retroflexion of the gravid uterus*. There may be difficulty alone, but more generally difficulty and frequency of micturition are noticed; the latter may alone be observed. *Organic affections* of the uterus, as cancer, fibroid tumor, polypus uteri, or simple hypertrophy, or an inflammatory or hyperæsthetic condition of the organ, may, each of them, give rise to frequent micturition. Pressure on the bladder, and consequent frequent micturition, may be produced by abscess in the cellular tissue between the bladder

and vagina, or by effusion of blood into the peritoneal cavity around the uterus in peri-uterine hæmatocele.

Dysmenorrhœa is often associated with frequent micturition; the tenesmus of the uterus extends to the bladder.

Certain conditions of the bladder itself may give rise to frequent micturition. *Calculus of the bladder, cystitis, cancerous disease of the organ*, the condition known as the "*irritable bladder*," occasion this symptom, which is, moreover, observed in the early stage of the affections in question. The *presence of blood in the urine* occasions frequent micturition, as do also *various disordered conditions of the urine*. *Irritation propagated from the kidneys*, when these organs are diseased, or *from the rectum*, as when *hæmorrhoids* are present, may occasion frequency of micturition. Cases in which hæmorrhoids disturb the function of the bladder not seldom remain for some time obscure.

Inflammation of the urethra, as in gonorrhœa, or occurring irrespective of gonorrhœa, is a cause of frequent micturition: the urine is then passed in drops, with scalding pain. *Vascular tumor* of the meatus occasions frequency of micturition, distinguished from inflammatory conditions by the long duration of this symptom in the former case.

MICTURITION INVOLUNTARY.

The conditions under which this symptom may be observed are the following:

Fistulæ in the Vesico-vaginal Septum.—In such cases, the patient has hardly the slightest control over the evacuation of the bladder, the urine escaping by the unnatural opening as fast as it is secreted. The formation of these fistulæ is generally connected with the act of parturition; but *sypilitic* or *cancerous* ulceration may be the source of the evil. If the existence of fistula be suspected, the vagina and the bladder must be carefully examined.

There are cases on record in which involuntary micturition was produced by the existence of a *vesico-uterine fistula*. Here the symptoms are very peculiar, but the nature of the case would be easily recognizable on careful study of its history, combined with examination of the vagina. If the urine were seen issuing from the os uteri, this would conclusively determine the question.*

* A most interesting case of this kind is related by Dr. Leishman, in the *Glasgow Medical Journal*, October, 1861. The patient in this instance could only retain urine within the bladder when lying on the side.

At the latter part of *pregnancy* micturition is often involuntary.

Retroflexion of the gravid uterus may occasion great distension of the bladder; and not unfrequently a case of this kind comes before us in this form: The patient complains of involuntary micturition; and, on examination, it is found that the condition really present is one of *retention of urine*, produced by retroflexion; small quantities from time to time escaping, owing to the extreme distension of the bladder. The period of pregnancy at which this distension of the bladder most commonly occurs is the fourth month. The distension of the bladder was supposed by William Hunter to be the cause of the dislocation of the uterus. Dr. Tyler Smith first pointed out that the retroversion (in many cases, at all events) is the primary evil; the fact being, that the retroversion existed before the pregnancy occurred.*

When the bladder is paralyzed partially or entirely, as in the course of fevers, etc., great distension of the organ and *overflow* may occur, as in the case of retroflexion just noticed.

After parturition there is often involuntary micturition for a few days, which may extend to weeks or even longer. The muscular structure of the urethra has in such cases undergone undue pressure and injury during the act of parturition. In women who have large families, the neck of the bladder occasionally becomes thus permanently weakened, and the control over the bladder is subsequently always imperfect.

Tumors of the ovaries now and then produce involuntary micturition; the tumor drags on the bladder, and mechanically interferes with the action of the sphincter.

Great hypertrophy of the nymphæ was a cause of incontinence of urine in a case recorded by Breslau.† Owing to the traction of the enlarged nymphæ, the action of the sphincter was interfered with.

Cicatrization of the vaginal canal, after parturition, was the cause of involuntary micturition in a case under my care at University College Hospital. Here it was supposed for some time that there was a fistula high up. The cutting through the cicatrices necessary to explore the upper part

* "Obst. Trans.," vol. ii.

† Scanzoni's "Beiträge für Geburtsk." 1858

of the vagina led to the discovery that there was no fistula, and to the cure.

Cancer of the uterus may extend to the neck of the bladder, and give rise to involuntary micturition, due then to ulceration of the under portion of the urethral canal, or of the bladder itself.

Congenital defect of power over the sphincter of the bladder is very rare, but the possibility of its existence should not be forgotten. Congenital incontinence of urine may be due to *imperfect formation of the urethral canal associated with epispadias*, of which a very interesting case is recorded by Dr. Röser.* The case was that of a young woman, aged 18, who had an incontinence from birth. The clitoris consisted of two parts; the upper and anterior portions of the orifice of the urethra were wanting, and the orifice itself was very large. A cure was obtained by bringing the separated halves of the clitoris together by a plastic operation.

Micturition Impossible.—In cases where the patient is absolutely unable to pass urine, it is evident that there is either an impediment to the escape of the urine from the bladder, or that there is no secretion from the kidneys. In other words, the case is one of *retention* or of *suppression of urine*. In the distinction of these two conditions, it is to be remarked that retention is, as a rule, accompanied by a desire to evacuate the bladder, which is for the most part absent in cases of suppression: the exception is noticed in cases of paralysis of the lower extremities, and some other instances where there is *sensational* as well as *motor* paralysis. Cases are rare in which there is a possibility of taking suppression for retention; but it might prove a dangerous mistake, and it is one more within the limits of possibility, to overlook retention, and set down the condition as one of suppression. Such cases occur in connection with diseases producing great prostration, fevers being the chief of these. The patient may for a considerable time have no evacuation from the bladder; and, the circumstance escaping attention, the bladder is allowed to go on increasing in size. The obscurity of the case is often increased by the fact (previously alluded to) of a small quantity of urine escaping from time to time from the distended organ, and retention all the while persisting to a dangerous degree. The fact that the

* *Würt. Corr. Bl.*, 1861, and Schmidt's "Jahrb.," vol. cxii., p. 47.

patient has expressed no desire to evacuate the bladder must be disregarded; and, after a certain time has elapsed, an examination should be made, in order to ascertain whether the condition is one of retention or suppression. A case is related by L. Vandeweren,* in which a woman believed to be dropsical died from the effects of rupture of the bladder due to retention. The definitive decision between retention and suppression depends, then, upon the results of examination.

After labor the bladder is not seldom left distended for too long a time, owing to the patient experiencing no desire to evacuate it.

Cases in which retention is combined with involuntary micturition have been already disposed of.

Retention produced by inability to evacuate the bladder, coupled with distress and strong desire for the same, may arise from mechanical pressure on the neck of the bladder, of whatever kind. *Fibroid* tumors of the uterine wall, enlargement of the uterus by fluid, *ovarian tumors*, etc. *Retroflexion of the uterus*, or *retroversion* of this organ, when suddenly produced, may also cause retention, which either supervenes suddenly, or is not detected for a long time in consequence of partial escape of the contents of the bladder occasionally taking place. In cases of *prolapsus of the uterus*, retention may occur during the catamenial periods, when the organ is larger and heavier, and in cases of prolapsus of the bladder itself, chronic inversion of the uterus, etc.

Another form of retention, not by any means uncommonly observed, is that witnessed in *hysterical* patients. Retention from this cause is accompanied with a good deal of acute pain in the hypogastrium. The attack is of a more acute character than in the cases before considered. There is generally a history of previous attacks of a similar character. In many cases, the nature and cause of the presumed retention cannot be made out without an examination.

Lastly, there are cases in which no urine is passed because there is none in the bladder. I lately saw a case in which the ureters were occluded by cancer of the base of the bladder, and no urine could pass into the bladder. This kind of *suppression* has been known to be produced by pres-

* Larbaud, "Recherches sur le Catarrhe la Faiblesse et la Paralysie de la Vessie," p. 68.

sure of large ovarian or other tumors on the ureters. Often suppression in the true sense of the word is due to other causes, the consideration of which does not come within the scope of the present inquiry.

CHRONIC INFLAMMATION OF THE URETHRA.

The canal itself is in an abnormal condition: it presents to the finger a hard thickened cord, which may or may not be tender to the touch; the introduction of the catheter may be attended with much pain. In many cases we have urethritis as a consequence of *gonorrhœal* infection; there is in such cases redness and tenderness, and there is a puriform discharge from the urethra, scalding pain during micturition, and bloody urine. Gonorrhœal inflammation of the urethra continuing a long time, occasionally produces a hard, thick condition of the urethra, such as that above described; and, apart from a careful scrutiny of the history of the case, there may be nothing to indicate whether the chronic urethritis be of gonorrhœal origin or not. Frequency and pain in micturition, slight discharge, pain during sexual intercourse—these are the symptoms usually present in these cases.

Treatment.—The treatment of chronic urethritis consists in rest, the use of the tepid hip-bath, avoidance of all sources of irritation, observance of cleanliness, use of astringent lotions, or injection of weak solutions of alum or sulphate of zinc into the urethra itself. Such treatment will be sufficient in simple cases. Of internal remedies *copaiba* is undoubtedly the most effectual, and it may be recommended to be given in conjunction with other remedial measures mentioned, in all cases, and whether suspected to be of gonorrhœal nature or not. The disease is undoubtedly a difficult one to cure; especially is this the case where a thickened condition of the urethra is present. Great patience is generally required in order to bring the case to a successful issue. The application of nitrate of silver, powdered and diluted with sugar, or in solution, is sometimes necessary, especially in cases where the mucous membrane of the urethra is ulcerated.

STRICTURE OF THE URETHRA.

This is a condition sometimes met with in women. It necessarily occasions difficulty in micturition. By intro-

ducing a probe into the canal, the presence of an obstruction is readily recognized. It is generally traceable to the effects of mechanical injury, as from the pressure of the foetal head, contusions from instruments during labor, accidental injuries from without, contraction following syphilitic ulceration, or to chronic inflammation associated with gonorrhœa. Sir Henry Thompson* gives an account of the few cases of stricture of the female urethra which have been placed on record by others or observed by himself. He confirms the observations of previous authors that the obstruction is usually met with close to the external orifice of the urethral canal. It may affect the canal for a variable distance.

Treatment.—"In the management of the organic contractions of the urethra," says Sir Henry Thompson, "the use of dilatation, assisted, when necessary, by a division of the opposing part, . . . will generally be sufficient for their removal." The shortness of the canal, and its great accessibility, should render operative measures easy of application.

VASCULAR TUMOR OF THE URETHRA.

The tumor is an excrescence, bright red in color, which grows just within the external orifice of the urethra, varying in size from a pin's head to a hazel nut. It is usually more or less pediculated, and the pedicle may have a length, as I have myself seen, of a quarter of an inch. It consists of an hypertrophy of the mucous papillæ of the part, and the shape and appearance give one the idea of a vegetation growing on the mucous membrane. The tumor may be single or partially divided. The best account of the intimate structure of the tumor was given by Mr. Burford Norman, in the *London Journal of Medicine*, Feb., 1852. The growth is usually possessed of an extreme degree of sensitiveness. The symptoms produced are occasionally very severe, their intensity being out of all proportion to the size of the tumor. The chief symptoms are difficulty, pain, and frequency of micturition, pain in intercourse, pain on walking, etc. The most constant sign is pain immediately after passing water, whilst the last few drops

* "The Pathology and Treatment of Stricture of the Urethra." The Jacksonian Prize for the year 1852. London: Churchill. 2d ed., pp. 379 *et seq.*

are escaping from the bladder. These tumors may give rise secondarily to several other symptoms, and in some cases the symptoms are so indefinite that the diagnosis remains for a long time obscure, more especially in cases where false modesty induces the patient to refrain from giving such an explicit account of her symptoms to the medical attendant as to lead him to make an examination.

Treatment.—The tumor is best treated by carefully dissecting it off from the surface to which it is attached by means of a small scalpel or scissors, and applying strong nitric acid lightly to the cut surface. If a difficulty is experienced in seizing it with the forceps, Dr. M'Clintock's plan of catching it in a loop of thread forming a kind of snare, may be adopted. Other methods of treatment, such as cauterization with nitrate of silver, require a longer time, and are less satisfactory. There is hardly any affection to which women are liable which causes more uneasiness and discomfort, or which is removed more easily. Warty vegetations are sometimes observed growing just outside the meatus. In some cases of this kind which came under my own notice the affection gave rise to very painful pruritus; in others a large crop of warty growths situated in this position had given rise to considerable difficulty and pain on intercourse, and it was found that, in this latter case, the growths were of syphilitic origin. In these cases removal by means of the knife was the treatment adopted.

EVERSION OF THE MUCOUS MEMBRANE OF THE URETHRA

has been noted by Lisfranc, M'Clintock,* and others. In such cases, a tumor of variable size, of a reddish, a dark red, or pale red color, may occupy the position of the urethral aperture. It is easily distinguished from vascular tumor on attentive examination of the relations of the growth, and by the use of the catheter; and unless inflamed and very painful, it is capable of being pushed back and reduced.

Eversion of the bladder is sometimes observed in very young children. It occurs in infants, probably in the same class of cases as that in which eversion of the rectum is noticed, and from a like cause—viz., violent straining dur-

* *Loc. cit.*, p. 236.

ing coughing, or possibly in the dysuria due to presence of ascarides. Dr. M'Clintock refers to a case observed by Dr. Beatty, of Dublin, in a child nearly two years old. The tumor was scarlet, the size of a chestnut, very painful. It was replaced by pressure, and the urethra found to be very large. Mr. Crosse, of Norwich, had related a precisely similar case in a child about the same age, and which was at first considered to be a vascular tumor of the meatus. An operation was about to be undertaken for its removal, when Mr. Crosse discovered the true nature of the tumor. In adults, eversion of the bladder only occurs where fistulous openings are present.

Treatment.—These cases of eversion of the urethra, etc., should be treated by reduction, by rest, and the careful application of lint dipped in cold water as a compress. The retention of a catheter in the bladder has been recommended, but it would seem calculated to increase the irritability of the parts.

RETENTION OF URINE

may result from a multitude of causes (see p. 475). Here it is only necessary to point out the method of relieving the patient under such circumstances.

Warm fomentations frequently enable the patient to empty the bladder, but in many cases the use of the catheter is required.

Mode of Introducing the Female Catheter.—Ease in the use of the instrument is only to be attained by practice, but the operation is usually effected without much difficulty, by one conversant with the anatomy of the parts. The plan to be adopted is the following: The patient to be laid on her back; the operator is to stand on her right side; the right leg is to be flexed, the sole resting on the bed or couch. The operator then, by means of one finger of the left hand, carried from the abdomen over the pubes, ascertains the position of the clitoris, and of the urethral orifice just beneath it, and having done this, the right hand, holding the gum-elastic or silver catheter, is passed under the right leg, and the point of the instrument guided into the urethral canal. The principal thing is to make certain, in the first instance, of the position of the clitoris and urethral orifice; the latter is known by the fact that the vaginal canal is immediately below it. If the finger be introduced

into the vagina, the urethral canal must therefore be in the median line immediately above it.

It is convenient to have a slender india-rubber tube five feet long, attached to the catheter. The urine then flows directly into the receptacle placed on the floor.

In cases where the retention of urine is due to dragging upward of the bladder by tumors of various kinds, and pressure on the urethra, the direction of the urethral canal is much altered. In such cases a gum-elastic catheter should be always used, and care is required in order to avoid injuring the walls of the canal.

AFFECTIONS OF THE BLADDER.

Chronic inflammation of the bladder is an affection which in some shape or other comes before us rather frequently. After parturition, after operations about the genital organs, it is not unusual for the mucous membrane of the bladder to take on an inflammatory action, which at one time results in the exfoliation of the lining membrane, at another leads to chronic cystitis, with constant secretion of a ropy mucus, an ammoniacal state of the urine, occasional passage of blood, great distress and frequency in micturition, pain in the region of the bladder, and other troublesome symptoms. It is important to bear in mind that the symptoms referable to the bladder are frequently really due to morbid conditions of the kidneys, or ureters, or both. Information respecting the diseases of these organs will be found in standard works on medicine and surgery. Incontinence of urine is an affection liable to supervene on labor, when the urethra has been subject to long-continued pressure.

The timely use of the catheter after labor will prevent that destructive *cystitis* which may be produced by inability of the patient to evacuate spontaneously the contents of the bladder. If cystitis be actually present, with fever, pain, and tenderness, leeches may be required. Demulcent liquids should be given, such as barley-water, and all irritant articles of food avoided. Rest is exceedingly important.

Chronic cystitis may be produced by anteflexion of the uterus. I have met with some well-marked cases and have cured them by treating the uterine affection.

In the *chronic* form of the disease, cystitis is best treated

by the administration of the diluted mineral acids; uva ursi and pareira brava are medicines very generally found serviceable, in combination with diluted nitro-muriatic acid. Sir Henry Thompson has introduced the use of a decoction of the underground stem of the *triticum repens*, in cases of chronic cystitis in the male sex, and has found it of very great service in relieving the various distressing symptoms present in such cases. I have found it equally efficacious in the chronic inflammatory affections of the bladder in women. This distinguished surgeon states in reference to the use of demulcent decoctions, infusions, etc., in affections of the bladder, that large quantities are necessary in order that they may prove beneficial. Dr. West speaks highly of the employment of a seton introduced just above the symphysis in cases of chronic cystitis, and I have seen great benefit from counter-irritation in this locality. The general treatment of the patient in these cases is a matter of great importance; some patients require a liberal diet and regimen, while with others the indication is quite the opposite. The pain and suffering present in cases of cystitis must be relieved by opiates, and these require frequently to be given in considerable doses. In the United States the production of a vesico-vaginal fistula has occasionally been had recourse to in order to cure obstinate cystitis. Dr. Pallen* terms the operation "kolpocystotomy." When *cystitis proper* exists he is of opinion that "one remedy only will cure the patient—long-continued and absolute bladder rest. Kolpocystotomy is the only remedy." The opening is to be made by Paquelin's thermo-cautery at a *red* heat only. The surface is *gently and slowly burned* through. If done too quickly, hæmorrhage or closure results. The opening is kept thus for some months or years.

For the relief of incontinence of urine after labor, which may be more or less complete in degree, time is the great remedial agent. Repeated ablutions of the external genitals have a good effect in restoring the lost tonicity of the sphincter of the bladder. As a general rule, tonics are indicated, and the patient is to be encouraged by the hope—generally a well-founded one—that in the end the lost control over the evacuation of the bladder will be regained.

* *Amer. Journ. of Obst.*, vol. xi., 269.

POLYPUS OF THE BLADDER

is a condition which rarely comes under our notice. An instance, recorded by Mr. Birkett, is alluded to by Dr. M'Clintock, of *polypus* arising from the interior of the *bladder* and projecting through the urethra. The case occurred in a child five years old; the polypus grew from the upper boundary of the neck of the bladder, and formed a red mass projecting through the meatus and between the labia. Excision was performed. The child—greatly exhausted at the time—died. Dr. M'Clintock is probably right in thinking that the *écraseur* would suit such cases best. According to Dr. M'Clintock only eleven instances of this disease have been placed on record.

APPENDIX.

A.

DIFFERENTIAL DIAGNOSIS OF PAINS REFERABLE TO THE INTERNAL GENERATIVE ORGANS, INCLUDING DYSMENORRHŒA.

DIAGNOSIS of NATURE and CAUSE of PAIN REFERABLE to the INTERNAL GENERATIVE ORGANS, INCLUDING DYSMENORRHŒA.—I. Pains associated with Menstruation. II. Pains not associated with Menstruation—General Remarks—Four principal Situations: 1. The Back. 2. The Groins. 3. The Hypogastric Region: (*a*) Intermittent; (*b*) Constant; (*c*) Inflammatory in Character; (*d*) Acute, Intense Sudden Pain; (*e*) Hysterical; (*f*) Bearing-down. 4. Pains in the Lower Extremities—The various Causes of the Pains in these several Situations considered from a Diagnostic Point of View.

PAINS referable to the internal generative organs may be divided into two classes, viz.—(1) Those associated with the performance of the function of menstruation—dysmenorrhœa; and (2) Painful sensations experienced irrespective of menstruation. It may not be possible in all cases to draw an absolutely distinct line between these two classes of cases; but the separation should be made as far as is possible.

I. PAINS ASSOCIATED WITH MENSTRUATION, TRUE DYSMENORRHŒA.

In partial retention the pains are situated in the uterine region, and radiate from this point to the back and loins; they may be, and generally are, very severe, more or less paroxysmal in character, resembling, though on a small scale, the pains of labor, and often go on increasing in intensity until relieved. Coming on suddenly, lasting for a certain time, and then going off, to return again after a few minutes or after a longer interval—such is the character of the pain. The patient may not be entirely free from pain throughout; but the occasional, it may be periodic, exacerbation—this it is which characterizes it. When the pain is excessive, it may induce disturbances of the nervous system of various kinds—hysteric convulsions, agitation, anxiety, palpitations, tenesmus, pain in micturition, etc. Pain attending menstruation and also coming under the head of dysmenorrhœa may extend to the ovarian regions, deep down behind one or both groins, and it usually extends from this spot down the thighs. It may extend to the loins also.

When there is painful menstruation, the discharge appearing scantily, disappearing for a time, then reappearing, perhaps in gushes, and again ceasing—when this condition of things is noticed at successive menstrual

periods, it gives good ground for the suspicion that there is some difficulty in the escape of the fluid, and it will then be necessary to make a vaginal examination, and in certain cases to use the sound also. When coagula having the form of casts of the uterine cavity, or a portion of it, are passed under such circumstances, this is also in favor of the presence of mechanical obstruction.

It is important not to mistake abortion for dysmenorrhœa, and *vice versâ*. In the case of abortion, there has been suppression of the menses for one or more periods; but in dysmenorrhœa there have been usually preceding attacks of similar character, and no suppression of the menses has been (usually) observed. When there has been partial retention of the catamenial fluid, clots are often observed to be passed, accompanied with contraction of the uterus, and pains quite identical with those of labor; and in such cases very careful examination of the substances discharged may be necessary to enable us to distinguish their nature.

In one case which came under my observation, expulsive pains, such as those described above, were found to be due to a clot of blood in the vagina, the escape of which was rendered difficult by the circumstance of the orifice in the hymen being rather smaller than usual.

II. DIAGNOSIS OF THE VARIOUS PAINS REFERABLE TO THE GENERATIVE ORGANS, NOT ASSOCIATED WITH MENSTRUATION.

It is well known that pain at a particular spot is not always indicative of lesion or of appreciable change at the spot in question. The pain is frequently what is termed a "reflected" pain; at other times it is produced by pressure on the trunk of the nerve supplying the painful part.

It very frequently happens that pains of all three kinds exist simultaneously. Thus a fibrous tumor growing in the wall of the uterus may give rise to pain of the three varieties above mentioned, viz., pain in the uterine region itself, pain in the back—the reflected pain—and pain in the lower extremities; the latter due to the pressure of the enlarged uterus on the sacral plexus within the pelvis. So also an ovarian tumor may give rise to pain in the pelvis, to pain around the hips or back, and to pain in the thigh, or leg, or foot.

In the estimate of the causes of reflected pains now under consideration, the disorders of the bladder should also not be forgotten.

There is a class of pains referable to the generative organs, and very frequently observed, which may be conveniently described as "pressure" pains. The nerves which are most liable to suffer from pressure within the pelvis are those issuing from the anterior foramina of the sacral bone, which enter into the formation of the sacral plexus, and which supply also branches to the pelvic viscera. The nerves for a short distance lie close against the sacral bone, only separated from it by the fibres of the pyriformis muscle, and they may, during this part of their course, be compressed by a pelvic tumor against the hard surface of the bone in question. The nerves which are given off from the sacral plexus are, many of them, sensory nerves, and the effect of pressure on these nerves within the pelvis is therefore to produce pain in the skin supplied by the particular nerve so pressed upon. The following are the localities which may be affected in the manner above described: the hip-joint, the labia pudendi, the clitoris, nymphæ, perineum, the back of the coccyx, the

upper part of the inside of the thigh, the back of the thigh below the gluteus maximus, the leg, and the foot. The upper portion of the labia, and the portions of the skin or other parts of the lower extremity not included in this list, are supplied by branches of the lumbar nerves; these latter nerves are not liable to pressure from tumors situated in the pelvic cavity—that is to say, when such tumors are confined to that cavity alone.

It is not in the nature of things that any great regularity should be observed in the relation subsisting between location of lesion, and location of pain thereby produced, many circumstances being likely to modify or affect the result in particular cases.

There are four principal situations in which pain referable to the internal generative organs is experienced by women suffering from disorders of those organs.

They are—(1) The back; (2) the groin, or ovarian region; (3) the median hypogastric region; (4) the lower extremities.

Pain in the back is a well known sign of uterine disease. But it is not so well known that pain in one or both of the groins is often a sign of uterine disease. That such is the case, however, is very certain, and I am anxious to call prominent attention to it. Formerly a pain so situated was referred to the ovaries, probably in consequence of the ovary being near the spot. I was led to associate this pain with the uterus simply in consequence of the observation recurring over and over again, that patients so complaining were almost invariably found to be affected with ante flexion of the uterus. Latterly I have come to regard this pain as an almost certain sign of the presence of the affection in question, and it has very considerably modified my views as to the share the ovaries take in producing pains referred to the region in which the ovaries are situated.

I. PAIN IN THE BACK

is one of the most common symptoms in women laboring under uterine or allied disorders. The pain here alluded to usually affects the lumbar and sacral regions and the parts adjacent; it is not an acute pain, but an ill-circumscribed, aching sensation, very wearying, and often extremely distressing to the patient. The intensity of this pain is not by any means proportionate to the severity of the disease.

One of the most common causes of pain in the back is flexion of the uterus. Retroflexion is particularly associated with it, but ante flexion is very frequently the cause of it. Again, in quite exceptional cases, these flexions may be unattended with back-pain. Pain in the back generally also attends expulsive action of the uterus from *whatever* cause that expulsive action may originate. Dilatation of the os uteri is generally attended with it. Pain in the back is not necessarily indicative of disease of the generative organs, but the fact that a patient has for a considerable period suffered from such pain should induce the practitioner to consider whether disease of the internal generative organs, up to that time overlooked, be not present, and to take measures for satisfying himself on this point. The connection between the pain in question and uterine or other internal disorder is often substantiated by the fact that before, during, or immediately after the menstrual periods, it is most troublesome; sometimes, indeed, it is only present at such times. The pain of ordinary lumbago is the most likely to be confounded with it. Attacks of lumbago are, however, more acute in character, and they

occur irrespective of the menstrual periods. Diseases of the vertebræ, aneurism, diseases of the kidneys, etc., are some not uncommon causes of persistent aching or pain in the back.

2. PAINS IN THE GROINS.

A pain felt in the groins is most commonly due to *anteflexion of the uterus*. That this is a fact I am convinced by very numerous observations. Anteflexion does not invariably produce such a pain, but it does so in nine cases out of ten. The pain is a wearing, more or less constant one, increased by motion, sometimes only produced by motion, generally confined to one side, but not always.

In some few instances a settled, fixed, constant pain is present in the anterior part of the abdomen, rather higher up than the groin, and nearly on the level of the umbilicus. Such a pain I have met with, and traced its connection with *retroflexion* of the uterus. Some most remarkable instances of this have occurred to me in private practice, the pain ceasing instantly on removal of the cause. As a rule, retroflexion gives rise to pain in the back rather than the front part of the abdomen, but these exceptional cases do occur. Formerly such cases would have been termed "hysterical."

Ovarian pain, referable to the ovaries, and situated deep down sometimes in the inguinal or iliac region, is observed in some few cases, but they are few compared with that in which the pain is due to alterations of the uterus itself, as above explained. It may be due to interrupted or "disappointed" (to use Dr. Farre's words) ovulation, which may be likened to the aching caused by distension of the testicles, or be due to chronic inflammatory action in the follicles themselves. In a few cases the pain is a kind of neuralgia of the part without inflammatory action. It may be due to *sexual irritation*. Undue sexual irritation in the male is accompanied by aching and pain in the testicles. This pain seems to be comparable with it.

Another cause of ovarian pain, to which attention has been directed by Bernutz, and De Meric,* is gonorrhœal infection. An inflammatory action appears to be set up in the ovary, or in the peritoneal membrane near the ovary, in some cases of gonorrhœa, analogous to the orchitis witnessed in the male.

A variety of this form of pain was described by Dr. Rigby as being indicative, together with other signs, of a displacement—a kind of prolapsus of the ovary. The pain alluded to is "a peculiarly sickening pain about the sacral region, extending to one or other of the groins, and coming on in paroxysms of such agonizing severity as to render the patient frantic with the intolerable suffering.† The pain is greatly aggravated by passage of the fæces; the part in the vagina corresponding to the ovary is tender to the touch. "It bears a close resemblance to the intense and peculiar sufferings in a case of orchitis." Further, says this author, "the menstrual periods are always attended with greatly increased suffering." I have not met with such cases, unless in association with severe retroflexion of the uterus.

* *Lancet*, June 14, 1862.

† "On Diseases of Women," p. 278.

3. PAINS IN THE HYPOGASTRIC REGION.

The pains due to uterine diseases are frequently situated in the central hypogastric region. For diagnostic purposes we may consider—(a) Intermittent pains; (b) pains more or less constant; (c) pain of inflammatory character; (d) with symptoms as of perforation; (e) hysterical pain; (f) bearing-down pains.

(a) *Intermittent Pains.*

The most characteristic and most interesting, from a diagnostic point of view, are those pains which may be termed *labor-like pains*. The pains in question are peculiar in their nature; they come on in paroxysms, lasting a certain time, and leaving the patient pretty free during the intervals; and they are due to contractions of the uterus, generally excited by the presence of some body, substance, or fluid, within this organ. Under certain circumstances, it appears that pains very closely resembling these may be produced by the contractions of the vaginal wall itself, as in cases of clots of blood or foreign bodies in this canal. In most of these cases, uterine contraction is associated with the vaginal contractions in such a way that the latter element in the phenomena is unrecognized.

The typical "labor-pain" is that observed during parturition at full term, where the uterine contractions are most severe and most powerful.

In *women who have never menstruated*, the presence of hypogastric pain of the kind in question should make us suspect closure of the hymen, of the vagina, or of the os uteri, and that the menstrual fluid, although secreted, could not be expelled. As month after month passes without relief, they become more severe, and are finally of the most intense character. The enlarged uterus is usually then to be felt above the pubes.

In *women who have menstruated*, hypogastric pain recurring at intervals, sharp while it lasts, and leaving the patient free from pain in the intervals of the paroxysms, may be due to *abortion*. If the patient had passed over one or more periods without menstruating as usual, and if the pains above* described were accompanied by a discharge of blood from the vagina, this would render the suspicion of abortion so strong as to necessitate not only an examination *per vaginam*, but also a careful inspection of the matters discharged.

Respecting an abortion taking place at four, five, or six weeks, it would be exceedingly difficult for the practitioner to affirm positively that the case was one of abortion, unless he were fortunate enough to secure the ovum itself.

Menstrual Retention occurring subsequently to more or less Regular Performance of the Menstrual Function.—In these somewhat rare cases, generally due to closure of the os uteri, labor-like pains may be present.

In cases of *peri-uterine hæmatocele*, labor-like pains are usually observed, either preceding the occurrence of the hæmorrhage, or produced by the pressure of the hæmorrhagic effusion in the pelvis.

Presence of blood-clots fibrous polypi, retained portions of placenta or fetal membranes, degenerated (e.g., hydatidiform) ova, within the uterus. The uterus appears to be very capricious in regard to tolerance of bodies within it: large polypi are sometimes found in the uterus, which have given rise to comparatively little pain; while, in other cases, the patient may have been tormented almost daily by severe colic-like pains in the

hypogastric region from a comparatively small growth of the same nature.

Tumors Growing in the Substance of the Uterus.—Of these the fibroid tumor is a frequent source of pains of the kind now under consideration. The pains are most severe when the tumor is so situated as to impede the escape of fluid from the uterine interior. In cancer of the uterus, labor-like pains are frequently present, especially at an advanced stage of the disease.

Collections of Puriform or other Fluid in the Uterine Cavity.—In women suffering from chronic *flexions*, when the canal of the cervix is not so large as to allow a free passage of the fluid secreted, the uterus sometimes becomes distended with serous or puriform fluid, and labor-like pains supervene. This retention of fluid in the uterus in association with *flexions* is by no means uncommon. The discharges may in such cases be *offensive*. Such retention may occur when the uterus is *dislocated* from its normal position by tumors in the ovaries, etc. These labor-like pains are then also noticed.

Intestinal Irritation, e.g., Dysentery.—Pains due to this cause, and simulating the labor-like pains above described, may give rise, at all events at first, to obscurity in the diagnosis. The pains produced by lead-poisoning, and known as *colic*, could hardly be confounded with those of uterine origin.

Neuralgia of the Uterus.—In a lady whom I had attended for some years, the subject of occasional severe neuralgia, the neuralgia was frequently accompanied by what she herself termed "labor-pains." The pains in question were temporary, and subsided when the neuralgia had located itself elsewhere. Cases where such pains are more persistent are described by various authors as *rheumatism of the uterus*. Some of these cases are possibly really due to fibroid tumors.

Retention of Urine.—That this condition may give rise to labor-like pains the following case, the particulars of which were kindly furnished me by Dr. Leonard W. Sedgwick, will show: He was called to a young woman who was supposed to be in labor. In the abdomen was felt a tumor the size of a nine months' uterus; the patient was apparently in strong labor; violent bearing down pains, with only a short interval, were observed. The woman denied pregnancy, the tumor was found to be elastic, and no foetal limbs or body could be felt. Dr. Sedgwick tried the catheter and removed an incredible quantity of urine from the bladder. The straining efforts of the patient to evacuate the bladder gave rise in this case to "labor-like pains in very great perfection."

(b) *Pains more or less constant.*

These may occur in all degrees of intensity, and the causes of the same are so numerous as almost to defy classification.

In *cancer of the uterus*, severe hypogastric pain, which is generally remittent in character, accompanies almost constantly the more advanced stage of the disease; whereas at an earlier period in the history of the affection the pain is not so severe, and is more generally situated in the back. The "lancinating" pain which has been considered by some authorities as an early sign of cancer is correctly described by Dr. Rigby as "a sudden sharp burning dart of neuralgic severity, always proceeding from one spot, and sometimes transfixing the whole pelvis." But when hæmorrhage, offensive discharges, and pain of the kind now

described are all present together, a careful physical examination of the uterus is necessary; for there is a presumption that the case is one of cancer. Hæmorrhage and pain are sometimes entirely absent.

In *fibrous tumor of the uterus*, there may be severe hypogastric pain.

Flexions of the uterus frequently occasion pain in the hypogastric region.

Neuralgia of the Uterus.—It is rare for the uterus to be the seat of pain unless afflicted with flexion or some organic disease. The cases which were formerly designated cases of "irritable uterus" are otherwise explainable. (See Chapter XVII., p. 163.)

Disease of the Bladder.—Pain more or less persistent, and of a dull aching character, is observed where the bladder is inflamed—*cystitis*—the symptoms varying according to the intensity of the inflammation present. The function of micturition is always disordered in such cases, there being generally great irritability of the bladder, and consequent frequent and painful micturition. The cystitis may be idiopathic, it may be due to disease—*e.g.*, calculus of the kidney—it may be secondary to diseases of the uterus, or it may be due to *malignant disease* situated either in the uterus or in the walls of the bladder itself. In some cases the sufferings experienced by the patient, and due to cystitis, are very severe. As a rule, the disturbances in the function of micturition associated with this disease, render the diagnosis of the affection easy, but the disturbances in question do not necessarily point to the conclusion that the bladder is actually inflamed. The condition of the urine itself should be carefully inquired into, there being usually a large quantity of ropy mucus in cases of cystitis.

(c) Pain of Inflammatory Character.

Under this head are included all cases in which the ordinary signs of inflammation are present—pain, more or less acute in character; heat and throbbing; tenderness to the touch; feverishness; quickness of pulse, etc. These symptoms are often preceded by the occurrence of a rigor. They indicate inflammation of the uterus, of its peritoneal covering, or of some of the adjacent viscera or their coverings; and they are most commonly the consequence of labor, of abortion, of sudden disturbance of the menstrual function, or of operations about the genital organs. A frequent result in such cases is formation of *pelvic abscess*. Hæmorrhage into the peritoneal cavity, from whatever cause, may give rise to severe peritonitis and pain. An important class of cases is that in which inflammatory action is set up in the interior or on the surface of ovarian cysts. In a woman the subject of ovarian dropsy, sudden access of pain of this kind would excite suspicion that there was inflammation of the cyst. Acute inflammation of the bladder is a condition giving rise to hypogastric pain of the kind now under consideration.

An error liable to be committed is that of taking for inflammation a reflected pain, such as is observed in cases of so-called "hysterical" character. The pulse is the best criterion. In cases otherwise closely simulating actual peritonitis, or inflammation of the uterus, or of the adjacent organs, the frequency of the pulse in the latter affection is wanting.

An important class of cases is that in which

(d) *Pain of an Acute and Intense Character is suddenly felt in the Hypogastric Region,*

accompanied by great prostration, and depression and shock to the system generally. Fainting, continuing for a considerable time and frequently recurring, great pallidity of surface, cold clammy perspiration, weakness or almost complete absence of pulsation at the wrist, a feeling of sickness or violent and uncontrollable vomiting, are symptoms often witnessed in this class of cases. To these is usually added considerable swelling of the abdomen.

The symptoms in question are such as to excite suspicion of perforation or rupture of some of the abdominal or pelvic viscera, with consequent escape of blood or contents of the ruptured viscera into the peritoneal cavity, or rupture of an abscess and effusion of pus into the peritoneum, from bursting of an ovarian cyst, etc.

The conditions which may give rise to the alarming symptoms above described will now be enumerated.

The pain may be produced by an affection of the abdominal or of the pelvic viscera, and there are no signs by which it can be absolutely determined at the moment whether the seat of the accident be in the abdomen or in the pelvis proper. The concomitant circumstances generally enable us to decide this point, or the course of the case determines the diagnosis in this particular.

In *perforation of the intestine*, as from typhoid fever, from tuberculous ulceration, or connected with organic disease of the abdominal viscera, etc., the previous history would generally suggest the proper interpretation of the symptoms; and the pain is more usually, perhaps, referred to the umbilicus, or a point above it, than to the hypogastric region.

Certain conditions of the pelvic viscera, especially, are capable of giving rise to the symptoms in question. The following are the most important of these:

Pelvic Hæmorrhage from the Ovaries, Fallopian Tubes, etc.; including Cases of Peri-uterine Hæmatocèle.—The accident mostly occurs during or immediately after the occurrence of a menstrual period. It may happen in women previously healthy, but is more generally observed in women who are anæmic, and in whom there have been menstrual irregularities (see Chapter XL., p. 570). Walking a long distance, straining, the act of intercourse, or sudden muscular effort, may precede the attack; it may occur also without such apparent exciting cause. The symptoms observed in such cases vary in degree of intensity; there are reasons for believing that, in a slight form, the accident is rather common, and the symptoms being less severe, its true nature escapes recognition. When symptoms of the above kind occur in an intense degree, and in a woman who has been subjected to the foregoing influences, it may be suspected that they are due to a sudden outpouring of blood. The diagnosis is established by recognizing a semi-solid tumor above the pubes, or pressing on the vaginal walls—the effused blood—such tumor having been before wanting.

Hæmorrhage in Extra-uterine Pregnancy.—There is an important class of cases, in which an outpouring of blood takes place in connection with extra-uterine pregnancy. The hæmorrhage due to extra-uterine pregnancy may give rise to the formation of a tumor in the pelvis, of the same kind as that witnessed in pelvic hæmorrhages of other kinds, the suddenly occurring violent pain and the extreme degree of syncope being

the most significant. Here the patient is usually known or suspected to be pregnant. There may have been nothing about the case to excite particular attention; but more generally the woman has experienced unusual pains, or more discomfort than in an ordinary pregnancy. Slight occasional losses of blood are frequently observed in these cases of extra-uterine pregnancy, which are, under such circumstances, often mistaken for return of menstruation. The rupture occurs in the third or fourth month, or earlier in the majority of cases, when the ovum is in the Fallopian tube; it is rare that it is postponed much later than this. On the other hand, the time of rupture may be considerably later than this, if the ovum be attached just without the tube, or in the abdominal cavity itself; and there may be no rupture at all, the pregnancy going to full term, with further results, which need not be particularly alluded to in this place. Rupture of the foetal-containing cyst generally occurs when the foetus is developed in the Fallopian tube; but in cases of extra-uterine pregnancy of the "abdominal" kind, rupture is, on the contrary, rare. The hæmorrhage which takes place in cases of extra-uterine pregnancy is generally so great as to kill the patient, and death often takes place very quickly. In some cases the patient lives longer, and dies apparently from the effect of a succession of hæmorrhages.

Rupture of the Gravid Uterus Itself.—There are a few cases on record in which this accident has happened, and without any very obvious cause. The third, fourth, and fifth months are the various periods during which this has been observed. The symptoms noticed at the time of the rupture would not essentially differ from those in rupture of an extra-uterine pregnancy, but the previous history of the cases might be somewhat different.

Rupture of ovarian cysts, with escape of their contents into the peritoneal cavity, does not, as a rule, give rise to marked disturbance; in some cases, however, when, concurrently with the rupture, there is hæmorrhage, severe symptoms may be produced, more or less identical with those described; and even without hæmorrhage occurring, the escape of the contents of such cysts may give rise to severe symptoms and death. Thus, in a case recorded by Dr. Gillespie, an ovarian dermoid cyst, containing hair and pus, burst; the pus was effused into the peritoneum, and the case speedily proved fatal. In this instance, the symptoms were, for a few previous days, diarrhœa, occasional vomiting, abdominal pain. These, especially the vomiting, became suddenly aggravated, and death took place in a few hours, from collapse. The symptoms closely resembled those due to irritant poisoning.*

(e) *So-called Hysterical Pain.*

It is well known that the abdomen is very frequently the region in which pain is seated in cases of so-called hysteria. From other pains seated in the hypogastric region, hysterical pains are discriminated by careful inquiry into the history of the patient, when previous occurrence of hysterical symptoms is substantiated, and by the absence of signs of inflammation or mischief of other kinds. The character of the pain offers in itself no conclusive indication, for hysterical pain may resemble in degree and intensity almost all other varieties of pain. In most of such cases, the patient is the subject of chronic flexion of the uterus.

* *Edin. Med. Journ.*, May, 1862.

(f) *Bearing-down Pains.*

In women suffering from chronic disease of the uterus, complaint is often made of what are called *bearing-down pains*. They more frequently occur in women who have lost flesh and who are in a bad state of health, and in whom the uterus is diseased. Diseases of the uterus involving change of shape or position of the organ cause them more particularly, ante flexion of the uterus very commonly so. In some cases where bearing-down pains are present there is partial or complete prolapsus of the uterus or of its cervix. The bearing-down sensation is also present in cases where tumors of the uterus, pregnancy, polypi or fibroid tumors, cancer, etc., exist. It may be due to prolapsus of the bladder. Pains of this character generally point out the necessity for exploration of the uterus from the vagina.

PAIN SEATED IN THE LOWER EXTREMITIES.

It has been already explained how and why it is that tumors or enlargements of various kinds of the organs within the pelvis may give rise to pains situated in certain parts of the lower extremities. These pains have a mechanical origin, and there is consequently no sign by which we can distinguish, by means of the pain alone, the nature of the substance that is exercising the pressure which is the cause of the pain. The "pressure" pains are very important, however, in directing attention to tumors in the pelvis which might be otherwise overlooked. I have several times noticed pain of this kind in *early pregnancy*, and the occurrence of the pain attracted attention to the possibility of the presence of a tumor in the pelvis. In cases of retroflexion of the uterus, pain of this kind is a very common occurrence.

The pain frequently felt at the upper and inner part of the thighs and in the perineal region, in cases of *ovarian tumor*, is an instance of the same kind. Painful cramps are occasionally experienced in the calves of the legs, in cases where pelvic tumors are present. Cramps of this kind are frequently observed in labor, and these appear to be due to pressure of the hard parts of the fœtus on the sacral nerves. Pains situated in the anterior and other parts of the thighs, which regions are supplied with nerves from a different source, do not indicate a pelvic tumor. To this rule, however, there is an exception occasionally witnessed in cases of *pelvic abscess*, where the tumor rises up above the brim of the pelvis, and gives rise to pressure on certain branches of the lumbar plexus of nerves as they pass with the psoas and iliacus muscles from the abdomen to the thigh. Pain at the outer part of the thigh is not rarely a marked symptom in cases of pelvic abscess. Another symptom frequently noticed under these circumstances is painful contraction of the thigh, with inability to extend the limb.

In the majority of cases, the pains felt in the lower extremities belong to the "pressure" class.

Lastly, it must be remembered that there are many conditions capable of giving rise to pains in the lower extremities, quite unconnected with diseases or derangements of the generative organs. The following case may be mentioned as showing how irritation or injury within the pelvis may occasion pains elsewhere: A lady had been operated on for stricture of the cervix uteri upwards of a year previous to my seeing her. She was then suffering from severe pain in the groin and pain in walking.

The whole of the upper and inner part of the left thigh, the external part of the thigh, the gluteal region, the crista ilii and the left side of the sacrum were found very tender and acutely sensitive. Pelvic abscess was feared. After three months' rest the extreme sensitiveness still remained and localized in the same spots, but there was no evidence of formation of pus. This case was one of reflected pain, the primary cause being probably injury of a nerve in the operation.

B.

DIFFERENTIAL DIAGNOSIS OF PELVIC TUMORS AND ENLARGEMENT OF THE UTERUS, INCLUDING PREGNANCY, BY DIGITAL EXAMINATION OF THE VAGINA.

Enumeration of Tumors felt through the Vaginal Walls, and Summary of Diagnosis—Distension of the Bladder—Calculus of the Bladder—Distension of the Rectum by Fæces—Cancer of the Rectum—Retroversion and Retroflexion of the Unimpregnated Uterus—Retroversion and Retroflexion of the Gravid Uterus—Anteversion and Ante flexion of the Uterus—Fibroid Tumors growing from, and in, the posterior part of the Cervix Uteri, or from the Uterus itself—General Enlargement of the Uterus from whatever Cause—Pregnancy—Enlargement of Fallopian Tube, due to Distension by Serous or Purulent Fluid, by Blood, and Fallopian Pregnancy—Abdominal Pregnancy—Blood Tumors of the Pelvis (Peri-uterine Hæmatocele)—Ovarian Tumors; Diagnosis of the smaller and of the larger Ovarian Tumors from other Pelvic Tumors—Cysts of Broad Ligament (Wolffian Cysts)—Hydatid Cysts—Pelvic Cellulitis and Abscess—Osseous or other Solid Tumors growing from the Pelvic Walls.

It is here intended to consider the diagnosis of tumors situated in the pelvis around the vaginal canal, and there perceivable by the finger.

In Chapter III., p. 60, vol. I, will be found particular directions for placing the patient in a favorable position for examination. Attention to these particulars is imperative.

The points to which it is necessary to direct attention are—the degree of resistance imparted to the touch, the presence of fluctuation, the mobility or fixed character of the tumor, its size, shape, and relation to the uterus, the presence of inflammatory signs, tenderness, puffiness, or swollen condition of the parts with which the finger is brought into contact. When by careful observation we have obtained a good idea of the physical conditions of the tumor, the diagnosis is not a matter of much difficulty, unless in very exceptional cases. In many cases it is necessary, in order to complete the diagnosis, to conjoin with the vaginal examination an examination of the abdomen.

A tumor felt through the walls of the vagina on digital examination may be caused by—

Distension of the bladder.

Calculus in the bladder.

Distension of the rectum by fæces

Cancer of the rectum or posterior part of the uterus.

Retroversion and retroflexion of the unimpregnated or gravid uterus.

Anteversion and antelexion of the uterus in the non-gravid or gravid state.

Fibroid tumors growing from, and in, the posterior part of the cervix uteri, or from the uterus itself.

General enlargement of the uterus, from whatever cause, including pregnancy.

Enlargement of Fallopian tube, due to distension by serous or purulent fluid; or by blood, and extra-uterine pregnancy.

Blood tumors of the pelvis (peri-uterine hæmatocele).

Ovarian tumors, also enlargement or congestion of the ovary.

Cysts of the broad ligament (Wolffian cysts).

Hydatid cysts.

Pelvic cellulitis and abscess.

Osseous or other solid tumors growing from pelvic walls.

The tumors, which may be *felt equally on all sides*—that is to say, which are not felt exclusively in one or other position—are the following: Enlargement of the uterus; peri-uterine hæmatocele; pelvic cellulitis; ovarian tumors; extra-uterine pregnancy; fibroid tumors. Ascitic distension of the peritoneum should perhaps be added to this list, although there is no tumor in the strict sense of the word in such cases.

The tumors which are felt exclusively *behind* the os uteri are: Distension of the rectum by fecal matters; cancer of the rectum; retroversion or retroflexion of the uterus; gravid or non-gravid.

The tumors which are felt usually, but not exclusively, *behind* the os uteri are: Ovarian tumors in their early stage of growth; distension of the Fallopian tube by fluid of any kind; Fallopian pregnancy; Wolffian and hydatid cysts.

The tumors felt exclusively *in front* of the os uteri are: Calculus in the bladder, distension of the bladder with urine, anteversion and antelexion of the uterus.

If for the word “behind” the word “laterally” be substituted, in the foregoing summary, the account given will still be true, for those pelvic tumors which are lateral are generally also posterior to the uterus, and *vice versa*.

This short statement may serve to indicate the more prominent characteristics of the tumors included in the foregoing list. The several conditions in question will now be considered in detail, and their diagnostic peculiarities pointed out.

Distension of the bladder is more particularly observed when there is prolapsus of the uterus. In such cases the bladder may be partially protruded as far as, or beyond, the vaginal outlet. The softness, the presence of fluctuation, its position, and the fact of the tumor disappearing on using the catheter, are characteristic.

A stone in the bladder is readily felt through the lower wall of the bladder, by the finger introduced into the vagina; and the size and shape of the calculus or calculi can also be made out by this method of examination: an examination of the interior of the bladder, by means of the catheter or sound, would substantiate the diagnosis.

Distension of the Rectum by Fæces.—In this case a tumor is felt behind and through the vagina, in the position which the rectum is known to occupy. The distension is sometimes considerable, and the tumor very large. It is hard and irregular, and its shape is identical with that of the

rectum. Such a tumor it is hardly possible to confound with anything else. [A rectal touch completes the diagnosis.]

Cancer of the Rectum.—There may be felt behind the vagina, in such cases, a hard, irregular, nodulated tumor, evidently belonging to the rectum, and which may or may not be the seat of pain and tenderness on pressure. The cancerous mass may, and usually does, produce stricture and accumulation of fæces in the tube above, but very frequently there is a constant diarrhœa. It may be necessary to unload the rectum by means of enemata, to ascertain the position and relations of the cancerous tumor. This malignant disease may be found to have extended to the vagina itself, at its upper part, or it may appear to be an extension from the back of the uterus. The thickening of the vaginal walls, its adhesion to the parts beneath, and its continuity with the morbid and painful enlargements around the rectum, indicate its nature. Cancer of the encephaloid variety has in some rare cases been known to grow from the recto-vaginal septum, project into the vagina, and appear as a tumor between the nymphæ. Examination of the attachments of the tumor would clearly indicate its origin, as distinguished from tumors growing from, or connecting with, the cervix uteri.

Retroflexion or retroversion of the unimpregnated uterus is readily distinguished by the tumor forming part of the uterus, and by the use of the sound. It is most likely to be confounded with fibroid tumor growing from the back of the uterus.

Retroflexion of the Gravid Uterus.—Here the tumor may be of considerable size, the os is high up and difficult to reach, the patient is generally known to be pregnant, and the tumor has a softer feel than is communicated by a fibroid tumor in the same position. (See p. 378, vol. i.)

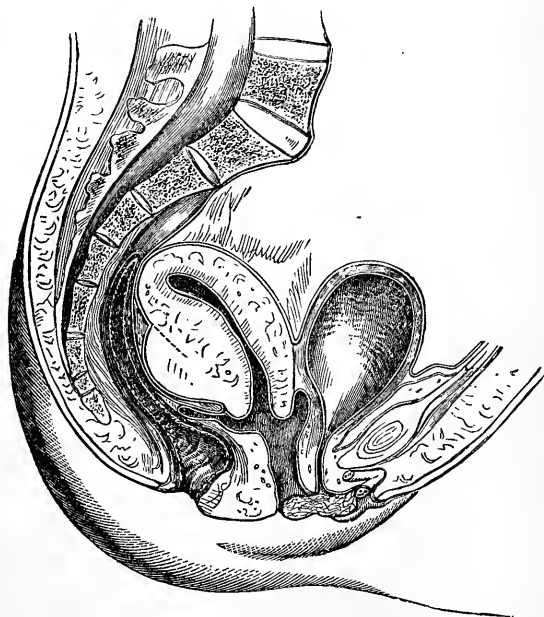
When the gravid uterus constitutes the tumor, the symptoms usually show themselves with great intensity, and quickly. The use of the sound would of course clear up all doubts, but unless the case be clearly not one of pregnancy, this instrument must not be had recourse to. An ovarian tumor does not effect such an amount of dislocation upward of the os uteri as is witnessed in the other case. From extra-uterine pregnancy, in which also a tumor may be present behind the upper part of the vagina, it is to be distinguished by the continuity of the tumor with the uterus, also by the non-symmetrical shape of the tumor in extra-uterine pregnancy. From fluid or bloody distension of the Fallopian tube, and from Fallopian pregnancy, the tumor due to retroflexion of the gravid uterus is also to be distinguished by its central position, its greater firmness, the continuity of the tumor with the cervix, etc.

Another condition with which retroflexion of the gravid uterus may be confounded is retroflexion of the unimpregnated uterus, accompanied with hypertrophy of the fundus and of the uterus generally, and with or without development of fibrous growths in the posterior uterine wall. Retroversion of the uterus with a fibrous tumor or tumors growing in its posterior wall, suddenly occurred to a patient who came under my notice with enormous distension of the urinary bladder. Here the effect was pretty much the same as if the uterus had been enlarged from pregnancy and had become suddenly retroverted. The greater elasticity, smoothness, and regularity of a tumor constituted by the impregnated uterus would, however, be the distinguishing character of the one, as the hardness, firmness, and resistance would be the distinguishing characters of the other condition.

In endeavoring to make out the diagnosis of a case of retroflexion, the examination by the rectum is of great value.

Anteversion and Antelexion of the Uterus.—If a tumor be felt through the vaginal walls in front of the cervix uteri, hard, smooth, and rounded in shape, while the os uteri itself is thrown somewhat backward, the case may prove to be one of anteversion or antelexion. The use of the sound, with proper precautions, would give us correct information as to this point, and prevent our falling into the error of Levret, who mistook an anteverted fundus for a calculus in the bladder. [The bi-manual method without the sound is sufficient to clear up the diagnosis of antelexion.]

FIG. 231.



Antelexion of the gravid uterus is, according to my experience, rather common. Its due recognition is most important, as miscarriage is to be apprehended when severe vomiting and disturbance of the functions of the bladder are well marked. The tumor is felt in front of the os uteri, which latter is situated further back than usual. The functions of the bladder are generally interfered with very much in such cases. During the fourth month the dislocation usually becomes reduced, and the patient is relieved—that is to say, in those cases in which a miscarriage does not occur before that period has been reached. (See p. 386, vol. i.)

Fibroid Tumors Growing from and in the Posterior Part of the Cervix

Uteri, or from the Uterus Itself (see Fig. 231).—It is sometimes difficult to distinguish between this condition and retroflexion of the unimpregnated uterus. In both there is a tumor, hard, smooth, and resistant, felt behind the upper part of the vagina and moving with the uterus. If a depression be felt between the tumor and the cervix, the case is probably one of flexion of the uterus. It is not a very common circumstance for tumors to grow in this position, the more usual seat of fibroid tumors being higher up than the cervix. Fibroid tumors growing from the uterus higher up and hanging down into the utero-rectal pouch might be mistaken for the retroflexion of the uterus, provided the shape of the tumor resembled that of the fundus of the uterus. The mobility of the tumor, and its want of connection with the lower part of the uterus would distinguish it from that due to fibroid tumor growing lower down. There is generally, in such cases, a want of symmetry in the tumor which is sufficient of itself to distinguish it from retroflexion of the uterus.

GENERAL ENLARGEMENT OF THE UTERUS, FROM WHATEVER CAUSE.—When the cavity of the uterus is considerably distended by a foetus, by a large polypus, or from whatever cause, a tumor may be felt behind or in front of the upper part of the vagina. In cases of pregnancy, the recognition of this tumor is of the greatest possible assistance in establishing the diagnosis.

Pregnancy.—The recognition of enlargement of the uterus is of the utmost importance as a sign, and one of the most reliable, of the existence of pregnancy. In some cases of pregnancy it is not easy to establish the presence of a uterine tumor by a vaginal examination, when such undoubtedly exists; in others, a uterine tumor being present, the difficulty is to associate it with pregnancy.

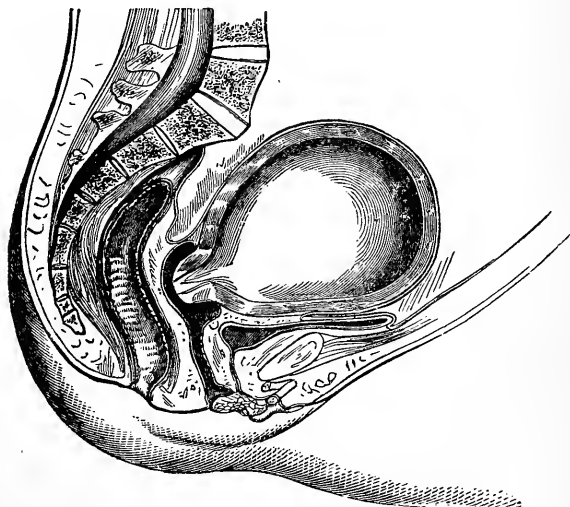
In normal pregnancy, the increase in the size of the uterus is not at first considerable, nor easily appreciated. The organ remains in the pelvis for about the first three months, and it is only toward the end of that time that, by a digital examination from the vagina, this increase in size can be positively appreciated. It may be easy to follow the growth of the uterus in a given case, when examinations are made from time to time, and opportunity for comparison is thus afforded, but it is not easy to pronounce upon the actual state of matters on the results afforded by a single examination. The increase in the size of the uterus, such as is due to pregnancy at a later period, is, however, more obvious, and it is then possible, also, to correct the results of a vaginal examination by the information derived from an abdominal examination.

Evidence of the enlargement of the uterus due to pregnancy is to be sought in the space between the cervix uteri and the pubes—*i.e.*, through the roof of the vagina. At the middle of pregnancy—during the fifth month—a rounded, smooth, tense, resistant tumor is here encountered by the finger, and this tumor shades off insensibly into the cervix uteri, there being no separation between them. There is sometimes a difficulty in recognizing this tumor when it is present: Gooch expressed the opinion that “the young practitioner finds more difficulty in satisfying himself about this symptom than about any other which is detected by touch;” and the statement is undoubtedly true. The difficulty sometimes arises, apparently, from the fact that the bladder, somewhat distended with urine, intervenes; at other times, from the tense elastic condition of the walls of the vagina and adjacent structures, interfering with the recognition of the tumor. If the supposed pregnancy have gone so far as the fifth month, the difficulty is almost always capable of removal by

placing the other hand above the pubes—by, in fact, employing conjointly the abdominal and the vaginal examination. Before the fourth month, however, the difficulty of detecting the enlargement is greater, and there is less possibility of correcting an error by having recourse to another method of examination. During the early months of pregnancy the uterine tumor is harder, firmer, and more resistant than it is subsequently, and the enlargement is not so easily got at, so to speak, from the vagina, owing to the interposed, and at first not materially altered, vaginal portion of the cervix uteri.

In pregnancy the menses are (usually) absent, the os is soft (examination of os uteri, p. 67, vol. 1), whereas in chronic enlargement or hypertrophy

FIG. 232.*



of the uterus the lips of the os are unchanged in this respect; further, in the latter case the enlargement remains pretty much *in statu quo*. The diagnosis of enlargement of the uterus due to fibroid tumor or polypus uteri from early pregnancy rests on nearly the same grounds; moreover, these fibrous growths generally give rise to hæmorrhage, or to more or less profuse menstruation. But a case may come before us in which it is a question whether a particular hæmorrhage be due to abortion, to fibrous tumor, or to polypus of the uterus. In abortion the os uteri is large, soft and open, whereas in fibroid tumor occasioning hæmorrhage the aperture is smaller, and the os is not soft as is the case in pregnancy. In cases of threatened abortion the os may, however, be found small. In polypus uteri the os may be open as in abortion, but the softness of

* Fig. 232 represents the position and relation of the uterus at the fifth to the sixth month. [The uterine wall is drawn a little too thick—G. H.]

pregnancy is not present. All these statements must be received subject to certain qualifications, elsewhere mentioned, in reference to the condition of the os during the early months of pregnancy. Cancer confined to the body of the uterus alone, which is a rare disease, could not be well mistaken for early pregnancy; the discharge, hæmorrhage, pain, etc., would put pregnancy out of the question.

The possibility of one of the conditions alluded to coexisting *with* early pregnancy must not be forgotten. In such cases much more difficulty would be encountered in making a complete diagnosis.

In cases of extra-uterine pregnancy, the uterus is enlarged and undergoes the same kind of changes, though not to the same degree, as in normal pregnancy.

After the fourth month of pregnancy the enlarged uterus is to be felt more distinctly between the cervix and the os pubis; the tumor is tolerably firm, and it is reached with a variable degree of ease. It gives an obscure sense of fluctuation, and *ballotement* is perceivable. The position of the patient which is most favorable for the purpose of ascertaining the existence of ballotement is the erect posture. The rectum and bladder having been thoroughly evacuated, the finger is pressed upward, resolutely but slowly, against the uterine tumor, and it is then very suddenly made to retreat for the space of half an inch or so, and there retained. The following instant the point of the finger is conscious of a slight tap, and this is produced by the foetus, at first pushed upward, falling suddenly by the force of gravity on the lower part of the uterine cavity, at the point with which the finger is in contact. The sensation communicated is very peculiar and characteristic. Cases are related by Depaul and Cazeaux in which the fundus of the uterus, enlarged and tilted forward, was felt through the walls of the bladder, and communicated a sensation like that of a foetus within the uterus. The presence of a stone in the bladder might equally give rise to the sensation.

There is another kind of ballotement which is performed through the abdominal walls, and which will be described further on.

Although fibrous tumors of the uterus, equally with polypus growing within the cavity, usually prevent the occurrence of pregnancy, or at least cut it short at an early period, the coexistence of pregnancy with either of these conditions is now and then observed: these complicated cases present, as might be expected, peculiar symptoms, and require careful examination and attention for their recognition.

Mole Pregnancy.—The most important of the conditions comprehended under the above title is that known as the hydatidiform mole. The symptoms are at first those of pregnancy, but no movements of the foetus are felt at the proper time for their appearance; the breasts do not pass through the regular series of changes, and yet the uterus continues^o to enlarge. The enlargement progresses more, often very much more, quickly than is the case in normal pregnancy. On examining from the vagina the uterus is found enlarged as in pregnancy, and the alterations met with in the vaginal portion may be pretty nearly identical with those peculiar to this condition, but the uterus is harder than is the case in normal pregnancy. It is, as before remarked, larger than it should be, considering the time the catamenia have disappeared. Hæmorrhages are occasionally observed, or an occasional discharge of a watery fluid from the vagina. It is not possible to detect ballotement as in regular pregnancy. The os uteri may or may not be open sufficiently to allow the observer to detect some of the hydatidiform cysts in the cavity. The

physical condition of the uterus, however, as ascertained by vaginal examination, may be such that it is impossible to distinguish it from normal pregnancy; even the fact that ballottement is absent does not positively assure us that there is not a living foetus within the uterus, as already remarked; and the diagnosis must then be guided by the result of abdominal examination, by a consideration of the rational symptoms, and by the history of the case. (See Examination of Abdomen, Appendix C.)

True hydatids of the uterus are extremely rare. Rokitsky met with one case. I have met with one also since the second edition of this work was published;* but I believe these are the only authenticated cases on record.

Missed Labor.—Under this term have been classed certain very rare and extraordinary cases in which, pregnancy having advanced nearly to its completion, the foetus has perished, and has been retained in the uterus for a variable time.

Enlargement due to Sanguineous Distension of Uterus (Hæmatometra).—Cases in which the uterus is largely distended with blood are rare. In most of the cases of this kind the distension is due to retention of the menstrual fluid, which is unable to escape owing to some abnormal condition of the canal of outlet, from an imperforate condition of the hymen, or congenital closure of the os uteri. In patients who have formerly menstruated, retention of menstrual fluid may be due to one of the following causes: *Occlusion of the os uteri*, in consequence of the use of caustics, or in consequence of *adhesion following parturition*; diseases of the uterus—e.g., *polypus uteri*, *hypertrophy of the cervix uteri*, *cancer of the inferior part of the uterus*, possibly also pressure of *tumors external to the uterus*.

A sign common to the conditions just described is absence of the catamenia—and care will be consequently necessary to distinguish such cases from pregnancy.

The remarkable symptoms produced by retention of the catamenial fluid have been elsewhere described. With reference to the physical characters of the tumor in the cases now before us, it is elastic, rounded, giving evidence of fluctuation, and, if large, this fluctuation can be made evident by simultaneous abdominal and vaginal examination.

Cases of hydrometra are rare. The hydrometra is usually present in women beyond the climacteric age; the enlargement is of slow growth, giving rise to few symptoms. There are, however, occasional severe labor-like pains, which are due to contractions of the uterus.

Purulent Collections in the Uterus.—The uterus may be distended with pus or with a puriform secretion, which may be considerable in amount.

* *Physometra.*—Here the uterus is enlarged from the presence of gas within its cavity. This disease is very rare, but the enlargement due to it may be very considerable. Escape of gas from the vagina is no evidence of its existence.

Tubercle of the uterus is a very rare disease. The enlargement may be considerable. Attacking the mucous membrane in the first place, the cavity of the uterus may at a later period become “filled by a purulent pulpy fluid” (Farre), and thus the uterus becomes enlarged in another way.

In cases of enlargement of the uterus due to any of the causes con-

* “Obst. Trans.,” vol. xii., p. 237.

sidered up to the present point, the tumor is to the touch more or less soft or elastic, or conveying an impression that there is fluid within. The next class of cases are those in which the enlarged uterus is hard and firm and resistant. The conditions which may under such circumstances be present, and between which we have to distinguish, are the following:

Fibrous tumor of the uterus.

Fibrous polypus within the uterus.

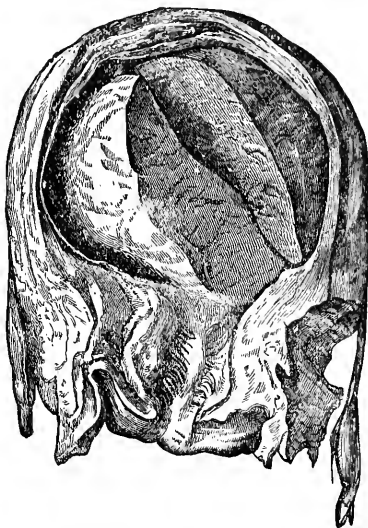
Cancer of the body of the uterus.

Chronic enlargement or hypertrophy of the uterus.

These different conditions are, with the exception of cancer of the uterus, all more or less chronic in character. Each of them may be attended with more or less profuse losses of blood.

Fibrous Tumors and Fibrous Polypi of the Uterus.—Whether the

FIG. 233 *



tumor be in the wall of the uterus or in its cavity (see Fig. 233), the uterus is equally hard and resistant externally. In the case of a polypus, the position of the uterus is more symmetrical, whereas a large fibrous tumor growing in the walls gives rise to distortion of the organ. The os uteri may be alike in the two cases—it may be opened or closed: in the case of polypus, however, it is more generally open, so as to admit the point of the finger, and frequently a portion of the surface of the polypus can be felt within the os, even if it be not found projecting into the vaginal canal. In some cases it is impossible to ascertain whether the

* Fig. 233, showing an intra-uterine fibrous polypus, is drawn from a preparation in the Museum of University College.

case be one of fibrous tumor or fibrous polypus, until after dilating the os uteri artificially, as first practiced by Sir J. Y. Simpson.

Cancer of the Fundus Uteri.—The diagnosis of cancer in this position, from polypus, chiefly turns on the rate of progress of the case, unless recourse be had to artificial dilatation of the os for the purpose of exploring the interior of the uterus, and thus obtaining further information. The body of the uterus may become affected secondarily, and so enlarged, but the condition of the os uteri in such cases offers decisive diagnostic data.

Chronic Enlargement or Hypertrophy of the Uterus.—An enlargement of the uterus due to this cause is limited in degree; pure and simple hypertrophy never gives rise to considerable enlargement. Hypertrophy of the uterus is an affection which is of a peculiar character; the uterus is thickened, increased in size, increased in vascularity; and it gives rise often to great discomfort from the pain, dragging sensations, feeling of weight, and from the effects of the mechanical pressure on the neighboring organs. It is usually associated with enlargement and hypertrophy of the vaginal portion of the cervix uteri; and, indeed, the condition of the cervix is the one which more usually attracts attention to the exclusion of the other morbid condition—viz., the enlargement and hypertrophy of the fundus or body of the uterus.

Enlargement of the Fallopian tube gives rise to a rounded, somewhat pyriform elastic tumor, which may be felt through the upper vaginal wall. The Fallopian tube occasionally becomes distended—in rare instances very greatly so—by a collection within it of *serous, purulent, or bloody fluid*: the distension may be due to development of the ovum within the canal—*Fallopian, or tubal pregnancy*. The tumor, constituted by a distended Fallopian tube, is usually of a somewhat lengthened form, resembling in shape a portion of distended intestine. If the whole Fallopian tube be equally affected a tumor of a semicircular, sausage-like form results. The distension may be limited to one or other end of the tube; one or both tubes may be affected.

The tumor, when of Fallopian nature, is rounded, movable, well-defined, separable (usually) from the uterus; situated in the retro-uterine pouch, a little to one side. Fluctuation may be evident in the tumor; it is elastic to the feel. There may or there may not be tenderness on pressure. Difficulty and pain in defæcation, “pressure pains” in various parts, pain in walking—these are the symptoms more often observed.

The tumors with which the distension of the Fallopian tube is most likely to be confounded are—ovarian cystic tumors in their early stage of growth, Wolffian cysts, hydatid cysts, and abdominal pregnancy. When Fallopian pregnancy is present, the course of the affection is different in different cases. Mostly the result is rupture of the tube in the second or third month of gestation, followed by speedy death (generally within twenty-four hours); or the rupture may not then be fatal, the foetus becoming encysted, and growing possibly till the full term of gestation has been reached. Accordingly, when we have to do with a chronic enlargement of the tubes, this latter condition may be dismissed from consideration. The diagnosis of tumors produced by distension of the Fallopian tube by fluid from other tumors, will be again considered under Examination of the Abdomen.

In *extra-uterine pregnancy*, the patient is usually known or suspects herself to be pregnant; the tumor grows continuously and pretty quickly, the uterus simultaneously enlarges, almost to the same degree as if the

ovum were within it. Menstruation is not so constantly absent as in ordinary pregnancy. The os uteri presents the conditions met with in pregnancy. Rupture of the Fallopian tube or of the cyst enclosing the fœtus, escape of the fœtus into the abdomen, and death, are the ordinary issue of these cases, the accident generally occurring before the middle period of gestation; cases of extra-uterine pregnancy are for this reason not often diagnosticated during life. The fœtus may, however, die and undergo mummification within the tube.

In many reported cases of tubal gestation, the condition actually present is defective development of the uterus, this organ being divided into two, and the ovum developed in one cornu of this double uterus. One cornu may be larger than the other; and when the ovum is developed in the imperfectly formed or lesser cornu, rupture almost invariably takes place; but when the ovum is developed in the more perfect cornu, pregnancy may proceed normally. Hence we may meet with cases in which the cavity of the uterus does not appear to contain an ovum, but in which a tumor containing an ovum is detected close to it; and yet the case may not be one of Fallopian pregnancy in the true sense of the word, but of pregnancy in one cornu of a bilocular uterus.

[This may be true. But it is a well-established fact that the uterus may be normally developed, and that an impregnated ovum may be arrested in that portion of the Fallopian tube traversing the uterine structure, giving rise to interstitial extra-uterine pregnancy. Our medical literature contains many examples of this anomalous pregnancy. Dr. Lenox Hodge, of Philadelphia, reports one, in which he cut into the sac from the cavity of the uterus and safely delivered the fœtus *per vias naturales*. A well-known case has lately occurred in New York which was under the care of Dr. Emmet, Dr. McBurney and Dr. Thomas, where the fœtus was destroyed by the electric current and discharged through the uterus.]

Abdominal Pregnancy.—In cases of abdominal pregnancy—that is to say, cases in which the pregnancy is abdominal to begin with, or in which it has become so in consequence of the rupture of the Fallopian tube—the ovum may become fixed and encysted at the lower part of the pelvis behind the uterus, and between it and the rectum, and may in this position give rise to a tumor of a rounded elastic character. Symptoms, such as bearing down behind, pain and discomfort in the pelvis, show themselves earlier when the case is not one of primary Fallopian pregnancy. The woman, from her sensations and condition, generally thinks herself pregnant. She may suffer greatly from pain during the whole course of the pregnancy.

The diagnosis of abdominal pregnancy, the tumor being in the pelvis, from Fallopian pregnancy, would be difficult at an early period; but if the pregnancy have advanced beyond the middle period, the presumption is that the fœtus, if not in the uterus, is not in the Fallopian tube. The possible case of double uterus before mentioned should be borne in mind. In a very extraordinary case recorded by Mr. L. R. Cook, there was simultaneous intra uterine and abdominal pregnancy, the pregnancy going on to full term.*

Occasionally we have to do with a tumor behind the uterus, which is constituted by the *remains* of the fœtus after abdominal pregnancy. These remains, enclosed in a sac which becomes adherent by inflammation to the adjacent peritoneal surface, and which may be recognized by the explor-

* "Obst. Trans., vol. v.

ing finger as bones, many continue undischarged for months, or even for years. In a case related by Dr. Brandt,* a bony tumor, containing the remains of a foetus, remained in the abdomen for fifty-four years; the patient had borne two children naturally since she became pregnant with the foetus which was afterward retained. Several other cases of a like character, but of less duration, have been reported.

Ovarian Tumors.—The larger number of cases which come before us, and in which there is a question as to the presence of ovarian disease, are cases in which the tumor has become so large as to invade the abdomen; there is an abdominal enlargement. It thus generally happens that the tumor, when it comes under our notice, is capable of being examined both from the vagina and through the walls of the abdomen.

We are now and then able, in cases of ovaritis or neuralgia of the ovary, to detect the slightly enlarged ovary by digital examination; the ovary being sensitive to the touch, its position is then easily ascertained. In the first stage of cystic tumor of the ovary, however, pain is usually absent, there is generally nothing to suggest the necessity for a digital examination, and it is not common for ovarian cystic tumors smaller than the fist to be diagnosticated. If the tumor, together with the ovary, be firmly attached within the pelvis, the symptoms will become developed at an earlier period than when the tumor is pedunculated, and when the freedom of motion it possesses is consequently greater. When an ovarian tumor is small, it usually occupies the utero-rectal fossa, and is not quite in the middle line.

In endeavoring to form a diagnosis as to the nature of a tumor we suspect to be ovarian, our first object should be to exclude the uterus from the consideration. The sound is here of great service (see Examination of Uterus by Sound). The tumor may, however, be adherent to the uterus; in this case the sound is also of service, by informing us of the direction of the uterine canal, and, further, as to the shape, size, and mobility of the tumor.

In a few cases where the development of the ovarian tumor proceeds rapidly, and the tumor remains in the pelvis behind the uterus, the inconvenience and distress which are produced are so considerable as to create greater difficulty as regards the diagnosis; micturition and defæcation are seriously interfered with, and severe pains in the pelvis or in the lower extremities are experienced.

In cases of extra-uterine pregnancy, when the cyst is situated low down in the pelvis, the tumor in its roundness, elasticity, and other physical characters somewhat resembles that produced by an ovarian tumor. From hydatid cysts growing in the peritoneal cavity low down, small ovarian tumors would be probably distinguished with difficulty. The hydatid cysts are usually more firmly fixed, and move with the vaginal wall; small ovarian tumors are usually movable and single, unless indeed in cases of double ovarian disease: whereas hydatid cysts attached to the pelvis in the neighborhood of the vaginal canal are usually two or three in number.

The tumor produced by peri-uterine hæmatocele differs from ovarian tumor—first, in its shape, which is usually not globular, as is the case in ovarian tumor; secondly, in its relations, it being less easily definable and separable from the adjacent parts than ovarian tumors; thirdly, in

* *Edin. Med. Journ.*, Sept., 1862.

regard to the accompanying or preceding symptoms; fourthly, in respect to its want of mobility as compared with ovarian tumor.

Abscesses, or plastic effusion, the result of inflammation of various kinds, might, under certain circumstances, be confounded with ovarian tumor. The history of the case should, under these circumstances, be carefully looked into, when its real nature will become at once apparent. Lastly must be mentioned the possible case of two tumors being found in the pelvis. It occasionally happens that pregnancy and ovarian disease are observed simultaneously.

We have now to consider those cases which are, clinically speaking, more common, and in which the tumor felt is *much larger* than this, so as to more or less completely fill the pelvis. There may be a very large ovarian tumor, and yet comparatively little direct evidence of its presence may be obtained by digital vaginal examination alone; for the tumor may have escaped altogether from the pelvis, dragging up with it the ovary and part of the broad ligament, to become a tumor nearly completely abdominal. We have now, however, to deal with those cases in which the ovarian tumor is still wholly or in part in the cavity of the pelvis, and to point out the diagnosis of the tumor from others with which it may be confounded.

A large tumor of ovarian nature occupying the pelvis necessarily exercises an influence on the surrounding organs. Thus the uterus is pushed to one side, or dislocated in various directions; it may be pushed downward or forward by the tumor, or it may be stretched and extended, so that the cavity is materially lengthened. The most important condition from which ovarian tumor is to be separated is enlargement or tumor of the uterus; this distinction is not unfrequently attended with some degree of difficulty. The first point to be made out is the position of the cervix uteri, and, this being ascertained, it is in most cases easy to decide whether the tumor be constituted by the enlarged uterus or by a tumor separate and distinct from this organ. The most reliable distinction between an enlarged uterus and an ovarian tumor is the fact that, in the former case, the cervix uteri is in the median line, and an equal portion of the tumor is on each side of it; whereas, in the other case, the cervix uteri is on one side, out of the middle line, and the mass of the tumor lies to one or other side of this part of the uterus. Even this is likely, however, to mislead. When the uterus is considerably enlarged (by pregnancy, *e.g.*), the cervix may be high up, and difficult to reach in either case; but when a large ovarian tumor is present, it is usually thrust out of the middle line of the body. In the case of pregnancy far advanced, the vaginal portion of the cervix would be altered also in other ways still more characteristic. It may happen, however, that enlargement of the uterus from pregnancy and ovarian tumor coexist in the same patient; in such a case the diagnosis would be cleared up by circumstances subsequently observed. If the tumor become pedunculated at an early period, it soon becomes abdominal, and there is less evidence of its presence afforded by a vaginal examination; but if it be sessile this change does not so readily take place, and the tumor may be moulded, so to speak, below to the cavity of the pelvis, while it may at the same time spread upward above into the abdomen.

When the ovarian tumor is large, or, at all events, when a considerable portion of such tumor occupies the pelvis, it may be confounded with retroversion of the gravid uterus, as well as with enlargement of the uterus of other kinds. In retroversion of the gravid uterus, the cervix

uteri is thrust upward and forward, and the fundus uteri forms the tumor which presses downward in the vagina. Such a position of the cervix uteri is rare when ovarian tumor is present.

Ovarian tumors, so large as to occupy the pelvis, can hardly be confounded with large fibrous tumor of the uterus. The ovarian tumors have greater elasticity than is the case if fibrous tumors be present, and the growth is much more rapid.

The diagnosis of the *nature* of large ovarian tumors has been considered in the chapters on Diseases of the Ovaries.

Other Cystic Growths in the Pelvis.—The cysts of the broad ligament (Wolfian cysts), which generally do not attain a size greater than that of an orange, may greatly exceed this in size. Their diagnosis is obscure, and chiefly rests on the chronic course of the affection.

Osseous or Other Solid Tumors Growing from the Pelvic Walls.—There are a few cases on record, in which osseous tumors—exostoses—have been found growing from the walls of the pelvis, and forming masses of various sizes and shapes. The diagnosis of the nature of such a tumor would not probably be attended with great difficulty. Its growth is slow, it is necessarily hard and firm, and it is immovable. There is a condition, also rare, which might be mistaken for it, viz., projection of the body of the lowest lumbar vertebra forward into the cavity of the pelvis, due to disease of the lumbo-sacral articulation; this disease being the result of injury, or simply constitutional.*

Cancerous growths from the inner surface of the ilium have been noticed. Kiwisch states that he saw a patient in whom a mass of this kind, of the size of a bead, in its shape and position resembled an ovarian tumor. Hard fibrous tumors are now and then witnessed growing from the sacro-iliac symphysis into the pelvic cavity.† Denman relates a case in which an excrescence of a firm fatty substance projected from one side of the upper part of the sacrum, and was so large as nearly to fill the pelvic brim. In Dr. D. D. Davis's work‡ are related two very remarkable cases, in which large fibrous tumors were found growing from the floor of the pelvis, and occupying this part of the pelvis so completely as to interfere with delivery.

The diagnosis of these tumors growing from the pelvic walls from tumors of the viscera might present some difficulty. The object would be to determine the point at which the tumor grew, and, unless it were of considerable size, this would be comparatively easy. Cases of the kind above alluded to are extremely rare.

* See Dr. Barnes's exhaustive essay on Spondylolisthesis in "Obst. Trans.," vol. vi.

† Kiwisch. "Klin. Vortr." Bd. II., edited by Scanzoni, p. 326.

‡ "Principles and Practice of Obstetric Medicine," vol. i., p. 142.

C.

DIAGNOSIS OF ABDOMINAL TUMORS INCLUDING PREGNANCY—EXAMINATION OF THE ABDOMEN.

Methods of Examination—Position of the Patient during Examination.

ENLARGEMENT OF THE ABDOMEN.—Results of Inspection as to Diagnosis of Nature of Enlargement—Palpation; Discovery of a Tumor; Percussion; Obscurity produced by Fatty Distension.

PRESENCE OF FLUID.—Various causes; Ascites, Ovarian Dropsy, Ascites with Tumor—Diagnosis of these—Extreme Distension of Bladder.

GASEOUS DISTENSION.

Cases simulating Presence of a Tumor.

Tumors traceable into the Pelvis; Enumeration of these; Tumors traceable into Pelvis more rarely met with; Brief Description of these; Tumors not traceable into the Pelvis; Enumeration.

Diagnosis between Enlargement of the Uterus from Pregnancy or otherwise; Ovarian Tumors and Distension of the Bladder; Particular Examination of the Signs of Pregnancy.

Confirmatory Signs of Pregnancy.

For clinical purposes, it is usual to divide the abdominal surface as follows: The portion of the abdomen above a horizontal plane passing through the anterior extremities of the tenth rib on either side, is the *epigastric region*, the lateral portions of which are the *right and left hypochondria*. The *umbilical region* is bounded above by the lower limit of the epigastric region, and below by a line passing between the anterior superior spinous processes of the iliac bones on either side. The *hypogastric region* comprises that portion of the abdomen situated below the line last mentioned. The inferior boundaries of this region are the ossa pubis, and Poupart's ligament on each side.

The *methods* of examination which we employ in investigating the condition of the abdomen are—1. *Inspection*, by which we are made cognizant of the size and shape of the abdomen, the condition of the integuments covering it, etc. Measurement of the abdomen belongs to this division of the subject. 2. *Palpation*, by means of which we ascertain the presence of varying degrees of resistance, hardness, softness, and the like, of the abdomen generally, or of different parts of the same, and are thus enabled to correct erroneous impressions conveyed by inspection alone. Under this head is included *fluctuation*, a physical sign of the presence of fluid. 3. *Percussion*, by the assistance of which we are able to distinguish between tumors or solid bodies, and distension by air or fluid. 4. *Auscultation*, in which the sense of hearing is employed for the detection of certain sounds. 5. A combined vaginal and abdominal examination by means of palpation over the hypogastric region, while the finger of the other hand is within the vagina, or with the uterine sound within the uterus. In the diagnosis of pelvic tumors of doubtful nature, this combined examination is often of the greatest possible service.

All these methods of examination are not employed in all cases. Inspection, palpation and percussion, combined, are the methods of examination most commonly employed, and in a few cases we find in the

employment of auscultation a means of arriving at a conclusion which other methods do not afford.

ENLARGEMENT OF THE ABDOMEN.

The causes of that enlargement may depend on a morbid or altered condition of some one of the generative organs, or it may not; it is necessary to start with no preconceived view of the case. The principle is to take nothing for granted, and not to accept anything as reliable which only comes to us second-hand.

Position of the Patient during the Examination of the Abdomen.—The patient should be placed, lying on the back, on a firm, unyielding couch or bed, the shoulders somewhat elevated, the knees a little drawn up so as to relax the abdominal parietes; the whole body in a state of absolute repose. It is sometimes desirable to engage the patient in conversation, in order to prevent a kind of involuntary contraction of the recti muscles, which often interferes materially with the attainment of the object desired.

If auscultation is to be practiced, the stethoscope must be applied to the skin, or fallacies are likely to arise. In many cases, an inspection of the skin itself is desirable. It is best, however, to commence the examination without entirely uncovering the abdomen, and to obtain thus a general idea as to the shape and size of the same, the presence of tumor, and the like. Before undertaking a regular examination of the abdomen, the contents of the rectum and bladder should be evacuated.

Is the Enlargement real, or only apparent, or assumed for Purposes of Deception?—Some patients, desirous of being thought pregnant, or for other reasons wishing to impose upon us, can acquire the power of projecting the abdomen forward, so as to simulate the enlargement due to pregnancy. This arching of the abdomen is effected by sharply bending the vertebral column in the lumbar region; and when patients presenting this factitious enlargement are made to lie down, on placing the hand over the centre of the loins a corresponding hollow is felt there. In a case which came under my own observation, the patient, a young woman about twenty-five years of age, had been supposed to have an abdominal tumor. On a casual examination, the appearance and general form of the abdomen were strongly corroborative of this supposition; but no tumor could be detected, no resistance was anywhere felt, and the tympanitic sound, on percussion, was decisive as to the correctness of this negative view of the case. The nurse in attendance directed my attention to the condition of the back, and it was then found that the patient was affected with angular, and also very slight lateral, curvature of the spine in the lumbar region, the consequence of an injury received a few years before. Here the arching of the abdomen was real, but there was no enlargement in the true sense of the word. Then there is a remarkable class of cases in which the abdomen is enlarged, the patient believes she is pregnant, and endeavors to persuade others that this is the case. Anæsthesia is essential in the diagnosis of these cases.

Size of the Abdomen.—From the mere element of size alone there is nothing very positive to be deduced. The most common causes of extreme persistent enlargement of the abdomen in women are ovarian dropsy and ascites.

If the enlargement be *symmetrical*, affecting the two sides of the abdomen equally, this is in favor of the presence of ascites or tympanitic

distension of the intestines. A want of symmetry is usually observed when the enlargement is due to the presence of a tumor, as in cases of ovarian dropsy (generally), fibrous tumor or polypus of the uterus, enlargement and tumor of the liver or spleen, etc. To this general statement there are many exceptions. Thus, in large simple cyst of the ovary the abdomen is often symmetrically enlarged at an advanced period of the disease. Similarly, ascites, when associated with tumors of the abdomen, often produces, superficially at least, a symmetry in the appearance of the abdomen on the two sides.

When we have to distinguish between ascites and ovarian dropsy, there is a point in reference to the shape of the abdomen which is of assistance, and it is this: That, whereas in cases of ovarian dropsy the enlargement is rounded anteriorly, whatever be the position of the patient, in cases of ascites the anterior surface becomes flattened when the patient is laid on the back. This distinction, however, may fail us when, as is sometimes the case, the distension of the abdomen from ascites is considerable in degree.

Results obtained by Palpation.—The hand is to be spread out flat, so as to bring as much of the palmar surface of the fingers into contact with the abdominal wall as possible. Pressure, slight at first and gradually increased in force, is then made over the whole of the abdominal surface, beginning with the hypogastric region, the general direction of the pressure being toward the vertebral column. One or both hands may be employed in this operation. It is important that the pressure made be at first slight in degree; otherwise contractions of the muscles are produced, and the attempt of the operator will be defeated. Normally, the abdomen offers no resistance to the pressure of the fingers (the patient being placed as above directed), save that produced by spasmodic and involuntary, or intentional contraction of the recti muscles; everywhere the fingers are allowed to sink inward to a considerable depth, and it is usually possible to touch the vertebral column posteriorly.

Discovery of a Tumor.—If the abdomen be only moderately distended, and the fingers can be made to sink inward equally at all points, whether above or below, but especially below, without encountering a hard resistant body, we may pretty confidently predict that no solid tumor is present. When the abdomen is largely distended, however, the case is different; the fingers may in some such cases be made to sink inward to a considerable depth without encountering a solid resisting body, while such a one is nevertheless present. This now and then happens when the abdomen contains a solid ovarian tumor together with a large amount of ascitic effusion.

Women desiring to frustrate the purpose of the examiner occasionally have recourse to the expedient of contracting the recti muscles. The practitioner will generally be able to procure the relaxation necessary by engaging the patient in conversation—in extreme cases by inducing anæsthesia, as mentioned above. The contraction is sometimes also purely involuntary. Such cases are extremely perplexing, as will be explained farther on; contraction of the recti muscles may actually simulate the presence of a tumor. In cases of suspected pregnancy, the recognition of the presence of a tumor is of extreme importance; for however positive the other signs of pregnancy may be, they are worth nothing if it can be clearly made out that there is no tumor discoverable in the abdomen. By palpation we are usually able to detect such a tumor at an early period of pregnancy, and the examination of this, or,

indeed, any abdominal tumor, should be conducted as follows: The patient should lie as above directed, the rectum and bladder having been previously emptied; the operator, having placed the hand flat on the abdomen close above the os pubis, is then to follow the admirable procedure recommended by Røederer. This consists in directing the patient to set the abdominal muscles in action by breathing very deeply, the hand being made all the while to follow the movements of the abdominal wall very closely. At the moment when the expiration is completed, the hand comes in contact with the hard, round, ball-like uterine tumor. In the discovery of tumors in the abdomen, which are not otherwise easily detected, this method of examination is quite invaluable. If the tumor be so large as to fill the abdomen, the method in question is of course of no service.

The recognition of a tumor is frequently, especially in cases of pregnancy, made difficult by the presence of a *fatty condition of the abdomen*, which prevents us from ascertaining the presence of the tumor due to the enlarged uterus.

Supposing that by careful kneading of the abdomen at every point no hard tumor is discoverable, if the abdomen be soft, and everywhere non-resistant, allowing the fingers to sink inward equally at all points, the enlargement not being considerable, it will be evident that it is not constituted by a solid tumor of any kind; neither can it be caused by a circumscribed fluid tumor (such as encysted dropsy of the ovary, for instance). If, however, the enlargement of the abdomen be *considerable*, the conclusion formed under the above circumstances cannot be so exact and definite. The fingers may be allowed to sink inward some distance without encountering solid resistance, but there may nevertheless be a solid tumor. Such a condition is met with, as before remarked, when there is a solid or other tumor of the ovary or a solid tumor of the uterus or of other organs *associated* with ascitic distension of the peritoneal cavity, or, again, when there is a very large unilocular cyst of the ovary occupying the abdomen, and which is not very tense or resistant.

Results obtained by Percussion.—The middle finger of the left hand, being pressed closely against the abdominal wall, is to be struck by the tips of the fingers of the right hand, sharply but lightly. If a clear sound be elicited, it indicates gaseous distension; but if the sound be dull, the distension is due to fluid or solid matters. We have in this mode of examination a ready method of distinguishing *gaseous* from *fluid distension*: palpation would give but little assistance in deciding between these two. When the enlargement is due to *fat* in undue quantity, percussion affords no decisive results.

When it is a question between gaseous and fluid distension, valuable aid is afforded by the *fluctuation* test. The palmar surface of the fingers of the left hand is pressed closely over one side of the abdomen, and the abdomen is lightly tapped by the fingers of the other hand on the opposite side. When fluid is present between the two points in question, an impulse is communicated through the aqueous medium, and the fingers of the left hand experience a sudden impulse, varying in character with the nature of the fluid and with the degree of tightness of the distension. No impulse of the kind is communicated when there is gaseous distension alone; but when there is an accumulation of fat present, a sensation somewhat resembling fluctuation may be conveyed. This, however, could only deceive an inexperienced observer. The test of fluctuation is only of value when applied by an educated hand. A sensation closely

resembling that of fluctuation is sometimes felt when the abdomen is largely covered with fat.

[We are often consulted by patients who consider themselves pregnant or suffering from a tumor of some sort, when, in fact, the enlargement of the abdomen is due wholly to deposits of fat in the abdominal parietes.

The diagnosis is easy enough. However thick the parietal cellular tissue may be with fat, the umbilicus is always clear of it. With the left index finger in vagina (patient in recumbent position) and two fingers of right hand pushed forcibly down into pelvis through the umbilicus, we can easily detect the tumor if there is one large enough to cause enlargement of the abdomen. If no large tumor is felt the diagnosis is then completed by placing the ulnar edges of the two hands longitudinally, one on each hypochondriac region, and then pushing them toward the umbilicus in such way as to lift the great rolls of fat up from the muscular walls of the abdomen. The same thing may then be done by transverse pressure with the two hands in like manner from the epigastric and pubic regions. I have seen cases of this sort where physicians of considerable experience were in doubt as to their nature.]

Results of Percussion or Palpation doubtful.—Sometimes the gaseous distension of the intestines is masked by the presence of a thick covering of fat in the omentum or in the abdominal wall, and a clear sound is consequently not elicited on percussion. This combination of slight tympanitic distension with accumulation of fat in the omentum and abdominal parietes is very commonly met with in women about the period of sexual involution, just at that period of life when the activity of the sexual organs is about to terminate; and when it happens that the patient is desirous of becoming pregnant—a not by any means unusual circumstance—the presence of this combined tympanitic and fatty distension of the abdomen—associated, it may be, with amenorrhœa, leads her to suspect that she is pregnant. Some most instructive cases illustrative of the points here set forth have been related by Dr. Gooch.* An examination of the state of the breasts and of the vagina must be made if the percussion and palpation results are indecisive, and if there be reasons for suspecting that a tumor is present.

A condition is sometimes met with where the abdomen is enlarged, no actual tumor discoverable, and where the intestines, more protuberant than usual, constitute the enlargement. This condition is met with sometimes during the first two months of pregnancy, while the uterus is yet too small to be felt above the pubes. The persistence for six months or upward of an enlargement of the abdomen, with no signs of a tumor discoverable, would negative the suspicion of pregnancy.

In some cases, the difficulty experienced in the detection of the tumor, no undue amount of fat being present, arises from the fact that there are *great tenseness and resistance*, the distension being, for the most part, uniform and symmetrical; and the difficulty is greater, because this tenseness and resistance preclude us from exploring beyond the surface of the abdomen. We are unable to determine positively whether a tumor be actually present or not. Here the fluctuation test and the results of percussion only are available.

The result of the examination, conducted in the manner now directed,

* See the edition of Gooch, published by the New Sydenham Society, pp. 111 *et seq.*

should be to enable the observer to determine whether the enlargement of the abdomen be due to—

- a. Presence of fluid;
- b. Gaseous distension; or,
- c. Presence of a tumor.

PRESENCE OF FLUID.

In these cases there is widespread fluctuation, this being evident over the greater part of the surface of the abdomen.

The conditions between which we have ordinarily to distinguish are:

Ascites;

Ovarian dropsy;

Ascites combined with presence of a tumor or tumors;

Some rare conditions to be presently mentioned, and not included under either of these three categories.

Two conditions somewhat difficult to distinguish one from the other are *ascites*, and a *single very large ovarian cyst*. They will be discriminated by attention to the following points:

First, as regards the *size of the abdomen*. This gives us no reliable information.

Shape of the Abdomen.—In ascites, the abdomen becomes flattened when the patient lies down, while in ovarian disease this flattening is not observed. In ovarian disease largely distending the abdomen, the floating ribs are pushed outward; the thorax is thus made to assume a peculiar conical shape. The enlargement of the abdomen in ascites is generally symmetrical, whereas in ovarian disease there is usually a swelling or prominence, more decided on one side than the other. This latter is a distinction which will not at all hold good when there is ovarian dropsy with only one very large cyst. The shape of the abdomen, speaking generally, is more ovoid in ascites, rounder in ovarian disease.

The *condition and appearance of the skin* vary usually in the two cases. In ascites, there is generally a marked enlargement and distension of the superficial veins, wanting in the other case. This is, however, not to be depended upon. I have seen the *lymphatics* enormously distended in an advanced case of ovarian disease, but this condition of the lymphatics is probably the exception rather than the rule. Moreover, I have seen a precisely similar condition of the lymphatics in a case where the bladder was very largely distended from the retroversion of the uterus, the uterus being the seat of fibroid growths. The lower part of the abdomen presented, in this latter instance, a most remarkable appearance; there were large cord-like, sinuous lines running upward, most of them in the direction of the umbilicus. It would not be possible to arrive at any definite conclusion as to the nature of the enlargement, either from the condition of the veins or from the condition of the lymphatics covering the surface.

There is *fluctuation* both in ascites and in ovarian dropsy. In ovarian dropsy it is often very indistinct, and where the abdomen is distended by two or more large cysts, it is unequal at different parts of the abdominal surface. This inequality is, of course, not noticed in ascites. In cases of ascites, fluctuation is perceived equally well, whatever may be the points between which it is sought for. If, however, there be one very large cyst, the same equality is observed in cases of ovarian dropsy. In both cases, the degree of facility of perception of this size varies extremely, this being dependent on the degree of distension.

ities is noticed. The dyspnœa produced by large distension of the abdomen in ovarian disease is generally much less than that attendant on ascitic effusion, because in the latter case the dyspnœa is often of organic, not mechanical origin.

Diagnosis of Ascites from Ascites with a Tumor.—Now and then a tumor is present in the abdomen associated with ascitic fluid, so considerable in quantity that the presence of the tumor is not discoverable, or, at all events, readily so. Kiwisch alludes to a case of ascites associated with pregnancy, where the operation of paracentesis was performed, and the trochar passed into a gravid uterus. Other instances are mentioned in Montgomery's work. Recorded experience shows that the question is not easy of solution in many cases. Examination of the uterus from the vagina, examination of the state of the breasts, a careful scrutiny of the circumstances preceding and attending the enlargement, become necessary. Pregnancy may be, as is evident from many recorded facts, very easily overlooked unless inquired after. Thus, a patient the subject of ascites, becoming pregnant, would naturally connect the increasing size of the abdomen with increase in her previous disorder; while the absence of menstruation might be set down by the medical attendant to the same circumstance.

In cases of pregnancy combined with ascites, there is often a dropsical condition of the lower extremities. In advanced ascites, anasarca of the lower extremities is, as is well known, frequent, and the case might be not unreasonably looked upon (by one not aware at least of the possibility of the existence of pregnancy) as one of ascites simply. Dr. Montgomery relates a case where the abdominal parietes were so exceedingly tense, and the quantity of interposed water so considerable, that the outline of the uterus could not be detected, nor the foetal movements felt, although the patient was seven months pregnant.* It is very important to recollect, in all cases where the woman is in a state for having children, and has an enlarged abdomen, that it is not sufficient at some previous period to have established the diagnosis of ascites. The diagnosis must be made afresh from time to time, and the state of the abdomen must undergo regular investigation; and this is more especially necessary if any operative measures, such as tapping, be contemplated. The observer should always make it a practice before going further to demonstrate to himself that the patient is not pregnant.

Ascites may be associated with other tumors. One of the most common cases is perhaps that in which there is an *ovarian tumor together with ascites*. Usually the distension is not so great as to prevent recognition of the tumor. Still it may be so. This association of ascites and ovarian tumor is more generally observed in cases where the ovarian tumor is of a malignant character than where simple cystic disease is present.

Mesenteric tumor may be associated with ascites, and may be so situated that it closely simulates an ovarian tumor. In such a case, as I have myself had practical proof, an exploratory incision into the abdomen may be the only means for deciding the nature of the case.

In an advanced stage of the disease, ascites, combined with *hydatid disease of the liver and peritoneal cavity*, may give rise to great distension of the abdomen. The history of such a case, but chiefly great enlargement of the liver, would point to the true conclusion, or, at all events,

* *Op. cit.*, pp. 133, 149, 162.

would afford indications sufficient to negative the idea that the enlargement of the abdomen was due to disease of any of the generative organs. Where a tumor is recognizable, the difficulty in diagnosis is necessarily not so great as in the case above supposed.

Lastly, respecting the diagnosis of these cases of extreme distension of the abdomen, where a tumor is suspected to be present, together with ascitic effusion, the operation of tapping renders it easy to substantiate the presence or absence of such tumor. And, in some cases of ovarian dropsy associated with ascites, a preliminary operation of this kind is necessary to enable us more nearly and more conveniently to ascertain the size, position, and relations of the tumor.

Some rare Conditions capable of simulating Ascites or Ovarian Dropsy.—One of the conditions in question is *extreme distension of the bladder* from prolonged retention of urine. A case will be found mentioned by Dr. Gooch,* in which retention of urine was associated with pregnancy, the distended bladder assuming a flattened form, owing to the resistance of the gravid uterus behind it; there was fluctuation, and the case was, in fact, assumed to be one of "dropsy." The case was originally related by Dr. Lowder, who stated that paracentesis was performed, that the trochar passed through the bladder, through the wall of the uterus, and even into the head of the child. Here the mistake probably arose from the presence of fluctuation over a considerable surface; but if percussion had been practiced near the lumbar regions of the abdomen, or even the suspicion of pregnancy had crossed the mind of the observer, the mistake might probably have been avoided.

In some very rare cases, *extreme distension of the uterus by fluid, associated or not with pregnancy*, has simulated ascites.

Cystic Disease of the Abdomen, not of Ovarian Character.—In some rare cases, large cystic growths (of the broad ligament) have been met with simulating ovarian dropsy. It is just within the limits of possibility that such a case might, the cyst being of large size, resemble one of ascites. [I do not think such a mistake could possibly be made by the author of this book, or by any one familiar with the diagnostic points in the two cases.]

GASEOUS DISTENSION.

When the greater part of the abdominal surface is tympanitic, the distension in question generally proceeds from the presence of gas in the intestines, in the stomach, or both. This form of *tympanitis* is witnessed in the advanced stage of fevers of various kinds, in puerperal fever, and under other circumstances. The comparatively sudden occurrence of the enlargement, the perfectly normal state of the abdomen previously, and the results of physical examination generally, render the diagnosis a matter of no difficulty.

CASES SIMULATING PRESENCE OF A TUMOR.

Cases of this kind will be found recorded in the work of Dr. Montgomery. One of the most extraordinary was the case of a woman, who in the year 1828, was operated upon in Berlin, under the idea that the case was one of extra-uterine pregnancy; on cutting into the abdomen no

* Quoted also by Montgomery, *op. cit.*, p. 324.

tumor and no enlargement of any viscus was detected. The abdomen has been opened with the intention of removing ovarian tumors, no tumor of any kind being discoverable. And the case is very far from uncommon in which women are supposed to be pregnant, and to have a tumor in the abdomen, when the event completely falsifies the diagnosis. In many cases, where such mistakes have been made, it is easy to see that sufficient care was not taken in substantiating the presence of a tumor, in defining its limits, etc.; but in some instances appearances were evidently calculated to mislead.

So-called "Phantom" Tumors.—The cases which present most difficulty are those in which an abdominal tumor is simulated, in hysterical women, the abdominal muscles being contracted in such a manner as to give the impression of a tumor to the hand of the observer. The tumor has this peculiarity: "If," as Dr. Montgomery remarks, "the patient can be made to forget that she is under examination, by completely diverting her attention, as by keeping her in conversation on some subject unconnected with her own case or state, while, at the same time, the hand is kept pretty firmly pressed on the abdomen, the tension gradually relaxes, the size diminishes, and all sensation of a tumor is lost."* Change of position may succeed in producing this disappearance of the tumor; but the reality of the tumor is most completely tested under the influence of an anæsthetic. The hand is then allowed to sink inward at the point where previously the tumor appeared to be situated. When the abdomen is covered with an undue quantity of fat—a condition often also associated with presence of fat in the omentum—the difficulty the observer experiences in satisfying himself that no tumor is actually present becomes more considerable; and etherization may, in such cases, be quite essential to making the diagnosis. It is not absolutely certain how the deceptive appearances of a tumor are actually produced, but it is probable that, in most cases, they are due to partial contractions of the recti abdominis muscles, a particular segment of the muscles being in a state of chronic contraction, and forming a rounded mass under the hand.

Having cleared up any doubt as to whether there be actually a tumor or not, the further steps to be taken will now be considered.

It will be found convenient for purposes of diagnosis to begin with determining, by physical examination of the tumor, under which of the following heads it should be placed; and, this elementary diagnosis having been made, to pursue further inquiries in the direction thus necessarily indicated: (A) The tumor proceeds from, or is connected with, the pelvic cavity; (B) The tumor is not connected with, or distinctly traceable into, the pelvic cavity.

(A) TUMORS WHICH ARE TRACEABLE, OR MAY APPEAR TO BE TRACEABLE, INTO THE PELVIS.

Enlargement of the uterus, from pregnancy, fibrous tumor, etc.
Ovarian cystic disease or tumor.
Peri-uterine hæmatocele.
Distension of the urinary bladder.
Pelvic cellulitis and abscess.
Fæcal tumor.

* *Op. cit.*, p. 398.

The more uncommon causes are—

- Enlargement and distension of Fallopian tube.
- Extra-uterine pregnancy (usually).
- Sub-peritoneal cysts.
- Cysts or solid tumors in omentum.
- Fibrous, cancerous, or osseous growths from pelvic bones.
- Hydatid tumor.
- Enlargement of spleen (when the spleen is so enlarged as to extend into the pelvis).
- Cancer of peritoneum.
- Cysts or tumors connected with the kidneys.
- Distension of ureter.
- Enlargement of liver.
- Retained encysted foetus—which may also come under the next head (B).
- Cysts of the broad ligament (Wolffian cysts).

(B) TUMORS NOT TRACEABLE, NECESSARILY SO AT LEAST, INTO
THE PELVIS.

- Disease of the liver, giving rise to enlargement of the organ, hydatid tumor, etc.
- Enlargement of the spleen.
- Hydatid tumors in cavity of abdomen.
- Fæcal tumor.
- Fibrous tumor of the uterus, pedunculated.
- Cancer of peritoneum.
- Fat in omentum.
- Enlargement, etc., of kidneys.
- Movable kidney.

It will generally be found comparatively easy to determine the series to which the tumor before us belongs. Commencing at the most prominent part of the tumor, and pressing gently but firmly through the abdominal parietes on its surface, the continuity of the surface in question is to be traced in all directions, and the limits of the same accurately made out. Thus, a tumor, the most prominent part of which is just above the umbilicus, may be traced upward from that point to the margin of the ribs on the right side, being at that point not separable from the liver; while, on endeavoring to trace it downward, it may be found to cease abruptly at the umbilicus, or a little below it. Such a tumor would belong to the second of the above series. The fact that the tumor ceases at the point indicated may be made out simply by palpation, the abdominal wall being lax or thin; but palpation alone may not be sufficient to establish this when the opposite state of things prevails, and percussion is then of service. Thus—to take again the above illustration—the tumor being hard, firm, and dull on percussion superiorly, the fact that at a particular point this dulness is exchanged for a tympanitic note, this tympanitic note being identical with that obtained over the lower part of the abdomen generally, would lead to the desired conclusion as to the lower limit of the tumor. Again, in the case of a tumor presenting the fluctuation sign, the limit of the fluctuation would of course indicate the limit of the tumor; it would be necessary to recollect that, in the case of a tumor of a composite character, fluctuation might cease at a particular point without this necessarily indicating that this point was the

boundary of the tumor. And with reference to the particular sign, fluctuation, there is this general caution to be given—that it by no means follows, because a tumor contains fluid, that fluctuation should be perceivable when the walls of the cavity containing the fluid are very tightly stretched, fluctuation may be entirely absent. Lastly, in determining whether the tumor proceeds or not from the pelvis, the history of the case may give important information. This information, however, is very often found to be either wanting, or so devoid of accuracy as to be practically worthless.

TUMORS MORE RARELY MET WITH.

(a) *Traceable into the Pelvis.*

Enlargement of the Liver.—In a case of this kind, careful examination shows a perfect continuity of the tumor with the liver above. The tumor is hard, resistant. The history of the case is agreeable with the theory that the tumor originated in the liver. But although simple enlargement to a considerable extent is rare, cases are not so uncommon in which a tumor growing from the liver extends downward even as far as the pelvis, or which is, at all events, apparently continuous with tumors which do so extend into the pelvis (see next paragraph).

Hydatid disease of the liver may give rise to a tumor extending from the liver into the pelvis, and the abdomen may become enormously distended by the parasitic growth in question. In a very remarkable case related by Dr. Bright,* the hydatids formed "round, well-defined elastic tumors" all over the abdomen, and in places forming elevations visible to the eye. The patient's age was 14. The hydatids were first developed in connection with the liver. The first sign of disease was the feeling a hard lump in the right side below the false ribs. The disease rapidly progressed, general emaciation and constantly increasing abdominal enlargement being the chief symptoms. There was dulness on percussion all over the abdomen, except at one part, just to the left of the umbilicus. It would seem difficult to avoid recognizing the nature of an abdominal enlargement due to this cause; an ovarian tumor reaching to the liver, and presenting rounded projections due to the contained cysts, might be possibly mistaken for it by an inexperienced observer. But an ovarian tumor growing to such a size as this would generally have a history essentially different. The ovarian tumor would have grown from below upward, and at some previous time would have been limited to the lower part of the abdomen. This distinction may fail in some cases. The physical characters of an ovarian tumor of this magnitude will be given further on. Here also may be mentioned an interesting case related by Dr. Bright, in which the tumor was due to hydatids, but closely simulated an ovarian tumor. The woman was 54 years old, and presented an enlargement of the abdomen, dating from nine or ten years previously, but only very obviously noticed for three years. The abdomen "was greatly enlarged; the upper two thirds occupied by an irregular tumor, indistinctly fluctuating, and, in various parts, somewhat tender on pressure; the lower part of the abdomen was also occupied by a fluctuating tumor, apparently a large cyst arising from the pelvis. The intervening space was soft, and was the only part which gave a clear or tympanitic

* *Op. cit.*, p. 30.

sound on percussion." A drawing accompanies the description of the case. "From its peculiar and irregular form," Dr. Bright concluded "that it consisted either of hydatids extensively distributed, or was an ovarian tumor; and if the latter—which, from its very singular form, and more particularly from the existence of the upper portion so separated from the lower, I could scarcely believe—I supposed that it must be one of those complex and malignant forms of disease. . . ."* The case turned out to be one of hydatids. There were two large cysts, one above and one below, the upper one incorporated with the liver, and between and in front of the two was stretched the transverse colon. In a case under my observation in University College Hospital, first under my own care and then under Sir William Jenner, considerable doubts as to its nature were dissipated by an exploratory puncture. It was an enchondromatous tumor of very great size. A noticeable feature in this instance was the growth of a portion of the tumor backward toward the loin, a position which, it may be perhaps stated, is never taken by an ovarian tumor. Cases of this kind are extremely rare.

Cancerous disease of the abdominal viscera, above the pelvis, may give rise to a tumor which is found to extend downward as far as the pelvis. Practically, however, such a tumor can hardly be confounded with any of the tumors with which we are more particularly concerned. In *cancer of the kidney* the lower margin of the tumor would, even in extreme cases, be felt above the brim of the pelvis, unless distension of the abdomen from ascites prevented it. "*Colloid cancer of the omentum*," says Dr. Walshe, "spreading like a sort of apron in front of the intestines, gives rise to dull percussion sound in proportion to its extent."† This is a very rare disease. *Cancer of the post peritoneal cellular tissue*, also a very rare affection, may give rise to a tumor slow in growth, and which may, moreover, grow downward into the pelvis.‡ The presence of nodules of a cancerous nature, perceivable in the abdominal walls externally, is an important diagnostic sign, although it is one not by any means always observed.

Enlargement of the spleen, the organ attaining such a size as to extend into the pelvis—an occurrence which must be very rare—could hardly be mistaken for an ovarian or uterine tumor, if the smallest pains were taken in investigating the history of the case.

Cysts or Tumors connected with the Kidneys.—A case is detailed by Dr. Bright, in which a large cyst containing puriform matter, and connected with the left kidney, simulated disease of the ovary. The patient was married, æt. 34. "For about three years she had a tumor on the left side of the abdomen; the exact situation of the part at which it commenced is not ascertained, but it appeared to have been sufficiently low down to have excited a suspicion that it depended on the ovary." After death, "a large but soft tumor was seen occupying the greater part of the left lumbar and iliac regions." It was an enlargement of the kidney, and had, when cut into, the appearance of a membranous cyst, the walls of which were an eighth of an inch thick. It contained dirty, discolored, watery pus.§ I saw, some time since, with Mr. Scott, a case of very considerable abdominal enlargement simulating multilocular ovarian disease, which proved to be one of cystic disease of the kidney.

* *Op. cit.*, p. 13.

† *Ibid.*, p. 310.

‡ *Ibid.*, p. 311.

§ *Loc. cit.*, p. 223.

Mr. Spencer Wells,* in a pamphlet "On the Diagnosis of Renal from Ovarian Cysts and Tumors," has described cases illustrative of this important subject, with conclusions based thereon. In one of the cases a cystic degeneration of the left kidney was taken to be a cyst of the left ovary. It was very large, occupied the whole left side of the abdomen, and had been previously tapped, and a quantity of dark discolored fluid, like pea-soup, removed. The whole aspect of the case much resembled that of ovarian disease, but a cord passed over the middle of the tumor, which was found to be the descending colon. Mr. Wells gives another case of soft cancer of the right kidney in a girl four years old, which had been supposed to be ovarian, but which was rightly diagnosed. Also a case of pyonephrosis of the right kidney, due to impaction of calculi in the ureter, which was relieved by an abdominal tapping. Regarding the diagnostic data in such cases, Mr. Wells points out that ovarian tumors are generally in *front* of the intestines, renal ones behind them, but this rule is open to exceptions; that discovery of intestine in front of a doubtful tumor should induce examination of the urine, blood, pus, or albumen being generally detected in renal disease; that the intestine may not be recognized as such unless care be exercised; that fluid discharged from a doubtful cyst should be carefully examined for ordinary products; that the renal disease grows downward; the ovarian upward; that it is only a very small ovarian tumor with a long pedicle which could be mistaken for a floating or movable kidney.

In cases of *distension of the ureter*, a tumor may be detected on one side near the vertebral column, but it does not appear that such a tumor has ever been confounded with tumor of pelvic origin; ordinarily the circumstances are such that tumors connected with the kidneys or ureters are not confounded with those originating in the pelvis.

Sub-peritoneal Cystic Tumor.—A very rare and exceptional case is that in which cysts situated externally to the peritoneum grow and form tumors capable of simulating ovarian cysts. Such a case is alluded to by Kiwisch.† The tumor formed gradually, attained a large size, was repeatedly tapped, and large quantities of fluid evacuated. The patient's age was 20. And the tumor first appeared after suppression of menstruation, the suppression occurring very soon after menstruation had begun. After death, three large tumors—one composed of a large cyst, and the two others of cysts together with fibrous tissue—were found behind the peritoneal membrane, occupying the lumbar and hypochondriac regions, and extending down into the pelvis.

Somewhat analogous to this is a case reported by Mr. Safford Lee,‡ in which a large tumor of the abdomen had existed for twenty-five years. It at last completely filled the abdomen and killed the patient. It was found to have commenced on the left side, just under the pancreas, but below the peritoneum, so that it rested on the posterior walling of the abdomen. A narrow pedicle, six inches long, of the size of a quill, connected it with the uterus. It was filled with turbid fluid, balls of fat and hair, calcareous matter, and a mass containing teeth and bones, strongly resembling an imperfect foetus. This appears to have been a case of "included foetus."

Cysts of Omentum.—Mr. Safford Lee reports a case which was under the care of Dr. A. T. Thompson. The patient had been tapped forty-eight

* *Dubl. Quart. Med. Journ.*, Feb., 1867.

† *Klin. Vortr.*, bd. ii. (by Scanzoni), p. 327.

‡ "On Tumors of the Uterus," etc., p. 124.

times. The tumor began on the right side of the abdomen. After death it was found to have originated in the omentum close by the pancreas, and was attached by a long thin portion to the uterus, but was entirely unconnected with the ovaries. At the upper part of the abdominal cavity, attached to the peritoneal surface, were a number of well-defined cysts containing a clear fluid.*

Retained Encysted Fœtus.—In some very uncommon cases, the fœtus, the product of an extra-uterine pregnancy, dies, having attained a certain stage of maturity, and remains, enclosed in a kind of cyst, in the abdomen of the mother, for a time which varies from a few weeks to many years. The history of these cases is necessarily peculiar and characteristic. The woman states that at a certain time she was pregnant, that the symptoms of pregnancy advanced pretty regularly, that at the time pregnancy should have terminated pains set in, and these, after lasting a certain time, went off, no delivery having occurred, and that the tumor which is felt through the abdominal walls dates from the period in question. Such a tumor is not incompatible with further pregnancy and healthy delivery, instances being known of women bearing mature and healthy children, the mummified body of the extra-uterine fœtus still remaining within the abdomen. The tumor in these cases is usually low down in the pelvis, or at all events partially so, and it is usually recognizable by vaginal examination.

Fibrous, cancerous, or osseous tumors, growing from the pelvic bones inward, may give rise to tumors perceivable through the abdominal walls. The firmness of these tumors, their want of mobility, and other physical characters, render their diagnosis from other, more common, abdominal and pelvic tumors easy. They are excessively rare.

Of the conditions which have now been mentioned—viz., enlargement of the liver, hydatid disease of the liver, cancerous disease of the abdominal viscera, or in the abdominal walls, enlargement of the spleen, cysts, etc., originating in the kidneys or uterus, cystic tumors behind the peritoneum or the omentum, retained encysted fœtus, fibrous or osseous growths from the pelvic bones—some are exceedingly rare, others are more common. One distinction between these tumors and those originating in the generative organs is very important, and one which can generally be relied upon, viz., that when the tumor originates in the generative organs, the vaginal examination shows some displacement, or some abnormal condition, of the uterus, or is the means of detecting a tumor in the pelvis. This negative evidence is of great weight.

The tumors next to be considered are met with rather more frequently.

Tumors of the Fallopian Tubes.—These conditions have been already alluded to (see p. 320). When they attain a certain size, they are perceivable also by examination of the hypogastric region of the abdomen, and even when they are of no considerable size, they may be felt in this position if the abdominal walls be thin and non-resistant. Tumors of the Fallopian tubes exceeding the size of an apple are rare, but it should be known that they may attain so large a size as to be capable of being mistaken for ovarian tumors. The tumor is generally elongated or pyriform in shape, and movable, and there may be a tumor on both sides. The position in which the tumor is felt is just above the groin—behind and below Poupart's ligament. The history of the progress of the tumor is generally diagnostic, to a certain extent, of its nature. Cases of tubal

*"On Tumors of the Uterus," etc., p. 123.

pregnancy are very rarely diagnosticated; inasmuch as rupture of the tube takes place before anything wrong is suspected; and if the pregnancy proceed to a later period, the case is usually looked upon as one of normal gestation. There are no physical signs by which a case of very extreme dropsical distension of one tube could be certainly distinguished from an ovarian tumor. In such a case the history would probably throw some light on the subject.

TUMORS MORE RARELY MET WITH.

(b) *Not traceable into the Pelvis.*

It will not be necessary to enter at any length into the consideration of the diagnosis of tumors in the abdomen not traceable into the pelvis, inasmuch as the subject is one scarcely coming within the compass of the present work. There are, however, some tumors of the abdomen which may not be traceable into the pelvis, and yet have their origin in the generative organs, concerning which some mention is required.

Fibrous tumors of the uterus sometimes become pedunculated, and the pedicle elongated to such an extent that they enjoy great mobility and freedom of movement. It might be difficult to say of such a tumor very positively whether it belonged to the uterus or to the ovary.

The fibroid tumors of the uterus, when growing from its peritoneal surface, may become detached from the organ, and remain fixed at any part of the abdominal parietes. When so fixed and separated from the uterus, the diagnosis of the nature of such a tumor would be necessarily difficult. It appears that the ovary also may become separated from its attachment by twisting of or dragging on the Fallopian tube, and that it may similarly become attached to some other part of the abdominal wall. The occasional occurrence of separation of fibroid tumors or of the ovary, from their normal attachment, is a circumstance to which attention has been directed by Rokitansky* and Turner.†

A pedunculated fibroid tumor of the uterus might be confounded with *movable kidney*, the rounded shape and the firm feel of the tumor being observable in both cases. The diagnosis of the fibroid tumor, detached and transplanted as above pointed out, would not be easily made out.

Cases in which the *omentum* is the seat of a considerable deposition of *fat* occasionally create embarrassment as to their diagnosis. It might be difficult to ascertain whether the tumor perceivable was actually traceable into the pelvis or not, owing to the usually associated fatty condition of the abdominal parietes; such tumors are most liable to be confounded with pregnancy, as already pointed out.

An exceptional case here requiring mention is the presence of a tumor due to an *extra-uterine foetation*, and so situated as to give the idea that it is not traceable into the pelvis.

A difficulty is more frequently experienced in determining whether the tumor proceeds from the pelvis or not in cases where solid tumors of the uterus or ovary are associated with *ascites* to an extreme degree. This class of cases has already been alluded to, in speaking of the diagnosis of the causes of considerable enlargement of the abdomen with the fluctuation sign present.

Some cases of *fecal tumor* may give rise to difficulty when the tumor

* See Schmidt's "Jahrb.," vol. cx., p. 306.

† *Edin. Med. Journ.*, Feb., 1861, p. 698.

is situated low down. The observations already made on the diagnosis of fæcal tumor here again apply.

Cancerous or cystic disease of the omentum, forming a tumor of considerable size, may closely simulate tumor originating in the pelvis. Ovariectomy has been attempted in some such cases. The surest means, perhaps, of avoiding similar errors of diagnosis in future is to indicate, as has now been done, the possibility of their being committed. If ascites were superadded in such a case, the difficulty would be greater. Attention to mode of growth of the tumor would be most likely to give satisfactory information.

In all cases where doubt exists as to whether the tumor extends into the pelvis, the history of the case is of great consequence. It generally happens that tumors of ovarian and uterine origin do, at some period or other of their growth, give rise to what may be termed pelvic symptoms—difficulty in defæcation or micturition, pains in the lower limbs, etc., etc., and absence of such pelvic symptoms, therefore, would be against the theory of pelvic origin of the tumor, though on these grounds alone it would not be safe to come to a conclusion. We should, however, certainly hesitate to perform ovariectomy in a case where pelvic symptoms had been absent from first to last, unless there were very good grounds for believing the tumor to be ovarian.

TUMORS TRACEABLE INTO THE PELVIS MORE COMMONLY OBSERVED.

Pelvic Cellulitis and Abscess.—A tumor rising up, sometimes a considerable distance, above the pelvic brim, may be caused by inflammation originating in the pelvic cellular tissue, generally following labor, or abortion, or wounds or injuries of the pelvic viscera. (See Pelvic Cellulitis.)

Peri uterine Hæmatocele.—The tumor arising from this may present features very much like those observed in pelvic cellulitis. The diagnosis has been considered in the chapter on Peri-uterine Hæmatocele.

Fæcal Tumor.—A tumor due to fæces accumulated at any particular part of the intestinal tract may extend into the pelvis and simulate a tumor growing from that part. A fæcal tumor is known by its irregular shape, by its doughy feel; it is dull on percussion at one part, and clear at another (from presence of flatus); the state of the bowels also is peculiar, great costiveness being present; and, moreover, the tumor disappears, or partially so, on administration of purgatives. Dr. Walshe gives an important caution, however, in reference to the uncertainty of such deduction, viz., that occasionally the solid matters cling to the wall of the bowel, leaving a passage in the centre; the tumor remains, and is a fæcal tumor, while the patient is passing daily liquid stools.*

The most important of the tumors traceable into the pelvis remain for consideration, and we have now to determine whether the tumor which is present be due to

1. Enlargement of the uterus, including pregnancy, normal and abnormal tumors, etc., of the uterus;
2. Ovarian tumor; or
3. Distension of the bladder.

The tumors of the abdomen, respecting which a diagnosis is most fre-

* Walshe, *op. cit.*, p. 315.

quently required, belong to this series, the cases not so included being, comparatively speaking, very few in number.

Distension of the Bladder.—The tumor due to this cause is always (in uncomplicated cases) of recent formation, and it dates back but a short time. A very instructive case, and one illustrating well the nature of the difficulties liable to be met with in determining this point, came under my care some years since.

A woman, æt. 46, married, mother of one child, 17 years old, presented herself at the hospital with an enlargement of the abdomen of three weeks' duration, legs very œdematous, the abdominal wall externally presenting enlarged lymphatics with great puffiness of the skin covering the hypogastric and inguinal regions. There was a distinct well-defined tumor rising from the pelvis and reaching to three inches above the umbilicus, not tender, hard, firm, not fluctuating, giving the impression at first sight of being an ovarian cyst. Vaginal examination was difficult, owing to the extreme pain it occasioned; the vaginal walls were protruded in a swollen œdematous state, and in the form of tumors, through the vulvar aperture. The os uteri, however, was felt to be high up behind the pubes, and a round, firmer, hard tumor occupied the pelvis itself. There was, judging from the history of the case, no evidence of pregnancy. She stated that she passed water freely, and had done so for the last three weeks. The examination *per vaginam* was so difficult as to be unsatisfactory; the *primâ facie* view of the case was that it was an instance of rapidly growing ovarian cystic disease. A catheter was introduced into the bladder. The discovery was then made that the tumor was due to an enormously distended bladder, and nearly six pints of urine, slightly, but not greatly, offensive, were drawn off, the tumor above the pubes entirely subsiding. The further information was then obtained, by examination, that the uterus was enlarged, that a large fibrous growth occupied the posterior wall of this organ, that the whole organ was retroverted in the pelvis, and that this was the cause of the retention of urine. The fibrous growth was situated chiefly external to the uterine wall, and altogether the uterus was about the size of the gravid uterus of between three and four months. Further inquiry now elicited some interesting facts in the history of the case, but which had not been alluded to by the patient until they were specially asked for. It appeared that three days before the abdomen began to swell she had slipped downstairs over five or six steps, and strained herself in so doing, but she took no notice of this, as no immediate inconvenience resulted. There was a little difficulty in micturition, but nothing marked, and the retention had been disguised by the fact that there had been a more or less constant overflow. The involuntary micturition was naturally enough misinterpreted by the patient, and was not mentioned until specifically inquired after. The uterus had become retroverted, the tumor sinking down into the sacral concavity, and the pressure and dragging on the neck of the bladder occasioned the retention.

The particulars of this case sufficiently illustrate the nature of the inquiries, and the mode of examination necessary to be made. The case just described is somewhat analogous to others which have been recorded. It might be said perhaps that the duration of the tumor in the case above related (only three weeks) would at once have settled the question as against ovarian disease; but in some cases it has been found that ovarian disease progresses with extreme rapidity. Kiwisch says, "We have seen a cyst, from the size of a fist to that of a child's head,

appear in the course of fourteen to twenty-four days, accompanied by severe local and general symptoms."* Further, in dealing with the statements of patients as to the duration of a particular condition we are always treading on uncertain ground. There was nothing, for instance, in the above case to prove that the duration of the hypogastric tumor dated back from only three weeks previous. It might well have existed, although much smaller, for some time antecedently.

The diagnosis between ovarian and uterine tumors will be considered at length in the chapters on Diseases of the Ovaries; a few remarks only on the subject will now be made.

The diagnosis, as made out by an abdominal examination, should be corrected and checked, so to speak, by a vaginal one; a positive opinion should hardly ever be given as to the nature of any case, however clear it may appear to be, simply on the results obtained by the former method of investigation. Mistakes, ludicrous or serious, or both, have not by any means unfrequently followed neglect of this important rule.

ENLARGEMENT OF THE UTERUS—VARIOUS CAUSES, INCLUDING PREGNANCY.

The causes of enlargement or tumor of the uterus are the following:

Simple hypertrophy of the uterus.

Pregnancy, normal and abnormal.

Uterine polypus and fibroid tumor of the uterus.

Retention of the menstrual or other fluid in the uterine cavity (*hæmatometra* and *hydrometra*).

Gaseous distension of uterus (*physometra*).

Abscess of the uterus.

Tubercle of the uterus.

Carcinoma of the fundus uteri.

Fibro-cystic tumor of uterus.

The least common of these pathological conditions are those which have been placed last on the list. The most common giving rise to uterine tumor are *pregnancy*, *fibrous tumor*, and *fibrous polypus of the uterus*. By far the majority of tumors in the abdomen, of any considerable size, and which are uterine in their nature, are found to be one of these three; and in practice, therefore, the diagnosis of these, one from the other, is of the most importance. The diagnosis of these three, one from the other, is far easier than the diagnosis of one or each of them from certain tumors of the ovaries, as will be presently shown.

DISTENSION OF THE UTERUS BY FLUID.

The cases coming under this head are some of the most important with which we have to deal, and their diagnosis possesses great interest. If the distension be at all considerable, the tumor produced by it is readily recognized above the pubes, and also from the vagina. Fluctuation is usually present when the tumor is large, but it is not a sign which can be greatly depended upon. One form of distension to which the uterus is liable is that produced by *retention of the menstrual fluid*, in young women who have never menstruated. In women who have menstruated

* "Translation by Clay," p. 112.

also, menstrual retention may occur in consequence of the *os uteri* or the *vaginal canal becoming occluded*, as after parturition, or by tumors in the canal of the cervix uteri. (See Examination of Uterus from Vagina.) Then there are cases in which *purulent collections* from various causes take place in the uterus, or in which fluid of a more or less *serous* character is found distending the organ. Lastly, cases of *pregnancy*; for although, normally, the amount of fluid in the uterus under such circumstances does not entitle the "enlargement of the uterus due to pregnancy" to be considered in this place, yet occasionally the quantity of fluid in the uterus, together with the *fœtus*, is very considerable indeed, and it has even been sufficient to obscure the diagnosis of pregnancy in some instances.

The diagnosis of these various forms of distension of the uterus is generally to be made out by a careful consideration of the attending circumstances and of the history of the case.

In cases where the woman is pregnant, but the *quantity of liquor amnii* is *very excessive*, it is just possible that on the first view of the case some difficulties might present themselves in the way of the diagnosis. A slight investigation of the history of the case, its progress and symptoms, would very shortly indicate the true explanation of the matter, and the signs of pregnancy revealed by a vaginal examination and otherwise would generally be conclusive as to that condition. Cases of this kind have been occasionally rendered additionally obscure by dropsical effusion into the cavity of the abdomen.

PREGNANCY.

The Feel of the Tumor due to Gravid Uterus.—It is during and after the fourth month that we may be able to feel the gravid uterus above the pubes. Up to the fifth month the tumor so felt is tolerably firm, not sensitive, giving the impression of a rounded, smooth mass. After this period the tumor is usually felt to be softer, this being due to fluid within it, and the degree of softness will vary with the amount of the fluid. There is often an obscure fluctuation perceivable. Soon after the fifth month harder masses or nodulations may be felt within the tumor, which gradually become more pronounced as it grows, these being the limbs or other parts of the body of the *fœtus* which may come into contact with the uterine wall. If, as occasionally happens, the amount of liquor amnii is very small, the uterine tumor is felt to be everywhere hard and more resistant, but the elevations and depressions corresponding to the irregularities presented by the *fœtal* surface are still to be detected. Usually it is necessary to press inward with the point of the finger to detect the elevations in question, but now and then both the abdominal and the uterine walls are so lax that the members or other parts of the *fœtus* are more easily felt on application of the hand.

In cases where the uterine tumor is not to be felt above the pubes, from fat, resistance, or other causes, there is a peculiar hardness and fulness of the region in question. The importance of engaging the patient in conversation while endeavoring to ascertain the physical characters of the tumor should be now kept in view. It will be found exceedingly useful also to make the patient inspire and expire very deeply several times in succession, while the hand rapidly follows the movement of the abdominal walls. Often, in this way, a tumor becomes recognizable, the existence of which would be otherwise problematical.

As regards the surface of the gravid uterus, it is usually perfectly smooth.

The discovery of the limbs or other parts of the foetus through the abdominal walls is not usually available as a diagnostic sign of pregnancy until a late period, when other equally significant data are also obtainable. But there are other signs of pregnancy obtainable at an early period, by simply feeling the tumor, which are of great importance—viz., the *feeling of the movements of the foetus within the uterus*. During the fifth month frequently, but after that time in the majority of cases, if the hand be laid smoothly over the abdomen and the suspected tumor, and gently pressed against it, a sharp, slight, but decisive tap is felt, due to the movement of the foetus within. This is felt with more or less ease in different cases. The woman may be undoubtedly pregnant, and with a live child, this sign being yet undiscoverable; but if a little patience be exercised, by manipulation and pressure the slight impulse will be perceived. It is often felt immediately on applying the hand, and is only felt again on removing and reapplying it. It is capable of being simulated by that sudden and spasmodic contraction of the recti muscles occasionally liable to be set up by the application of the hand in hysterical subjects; possibly also by the peristaltic movements of the intestines. The celebrated Joanna Southcott appears to have deceived her medical attendants by thus contracting the recti muscles. They believed that she really was pregnant. It has been recommended that the hand should be dipped in cold water in order more easily to excite foetal movements, but this is unnecessary, and the cold diminishes the acuteness of the sense of touch, while it is very likely to induce spasmodic contractions of the recti muscles, which are almost certain to be mistaken for foetal movements (Tanner).

There is still another sign of pregnancy derivable from palpation of the tumor through the abdominal walls, viz., hypogastric repercussion or ballottement. The patient is to be placed on the side, or, as Dr. Montgomery recommends, on the knees, “with the shoulders depressed, so that the foetus may be caused to gravitate toward the fundus uteri, which is also brought into more complete contact with the abdominal parietes.” The fingers are then to be pressed against the most dependent part of the tumor firmly but gently, and then very suddenly this pressure is to be withdrawn. In the act of withdrawing the pressure the foetus is felt to fall against the retiring finger, and this constitutes the sign in question. It is identical with the internal ballottement previously described. (See p. 499.) Without placing the patient in this position, this external ballottement is often practicable when the pregnancy is far advanced—that is to say, the patient lying on the back, pressure is steadily made by one hand on one side of the uterus, and manipulation by the other hand is performed on the opposite side of the uterus, as above directed.

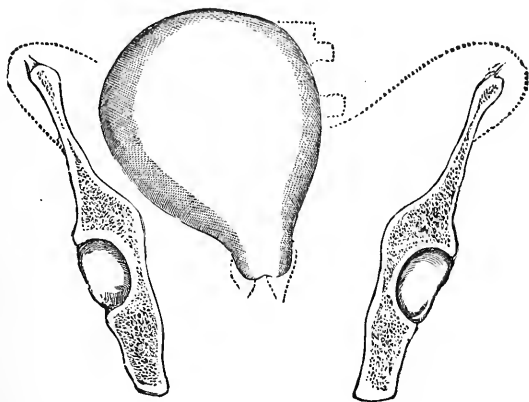
The value of this ballottement as a sign of pregnancy is great, but if the abdomen contained a solid pedunculated movable tumor, together with ascitic effusion, the sensation described above might be communicated. The internal ballottement from the vagina is not so liable to be simulated.

The Size and Position of the Tumor constituted by the Gravid Uterus.—Under ordinary circumstances the gravid uterus is, at the end of the third or beginning of the fourth month, so large that the fundus can be perceived above the brim of the pelvis, and during the succeeding months, unless interfered with by some abnormal occurrence, it rises progres-

sively higher and higher. In the sixth month the upper border of the uterine tumor is as high as the umbilicus. In the seventh month it reaches two inches or more above this point, and at the end of the eighth month it reaches the ensiform cartilage. After this time—that is to say, during the ninth month—although the uterine tumor increases in size, this increase does not show itself so much in the upward direction as laterally and anteriorly; and during the last week or two there is often an actual sinking of the tumor to a slight extent. (Fig. 236 shows a not uncommon position of the gravid uterus at the sixth month.)

As regards the *position* of the tumor, the uterus at first, and during the first two or three months, occupies a median position—until it becomes bulky and rises into the abdomen. But once in the abdomen, it generally occupies for the next two months—that is to say, speaking broadly,

FIG. 236.



during the fifth, sixth, and part of the seventh months—a lateral position, being most frequently found on the right side of the abdomen. The degree of the lateral displacement varies in different cases; the tumor may be, and has been, overlooked, owing to the observer not being aware of this normal lateral deviation. (See Fig. 236.)

The most important circumstance to bear in mind in deciding for or against pregnancy—size and position of the tumor alone considered—is the *relation which we find to subsist between the size and the duration of the tumor*. In pregnancy there is a progressive increase in the size of the tumor.

Further, we can frequently pronounce very positively, from the result of our examination, that there is no pregnancy. And the larger number of cases that come before us are cases in which the determination of this single point is quite sufficient. Thus, a woman is suspected to be pregnant, and it is known that if she be pregnant the pregnancy must have advanced—say six months. We examine and find absolutely no tumor in the abdomen, which is possibly fat and tympanitic. We can

say, with this fact before us, that pregnancy is impossible—pregnancy of the duration supposed, at all events.

In many cases practitioners—some of them men of high standing and reputation—have been led to form erroneous conclusions respecting the existence of pregnancy. Often the mistake has been committed by accepting the patient's statements, and making no examination, or a very superficial one. The account given by the patient and the symptoms observed not unfrequently very closely resemble those in pregnancy; so much so, indeed, that by many writers the condition has received a special name, "spurious pregnancy," "pseudocyesis" (Good); and the symptoms under these circumstances may be such that they deceive even patients who have often borne children. Accounts of such cases will be found in most modern text-books—Montgomery, Tanner, and others. The only safe rule to be followed is never to consider the diagnosis as actually established, unless some physical sign on which we can place reliance as a sign of pregnancy be detected. What these reliable signs are will be pointed out in their due order. The foregoing observations apply to ordinary cases. Here, however, must be mentioned a few of the more important exceptional cases, in which deductions, drawn as directed, might prove fallacious.

Thus, a woman ceases to menstruate for a period of three months; then at the end of the three months more she becomes pregnant, and three months later she informs her medical attendant that she is certainly six months pregnant. An examination is made, but no tumor is detected above the pubes, and the erroneous opinion is given that the patient is deceived, and that she cannot be pregnant. Cases of this kind are not very uncommon. [The diagnosis of pregnancy at three months is by no means difficult. By the bi-manual method the size of the uterine tumor is always easily mapped out. Then is it a uterine fibroid or pregnancy? In pregnancy, even at this early stage, the cervix is softer, and we have the bluish color of the vagina, not so marked as at the fourth month. These, with the history of the case, leave but little room for doubt.] Another instance is that in which a woman becomes pregnant, the foetus dies (at the age, for instance, of three months), but is not expelled. The woman does not increase in size, and for this reason the case may be supposed not to have been a case of pregnancy at all. This case is not a common one, however. Another is that in which the uterus having become impregnated grows with inordinate rapidity, and we find the uterine tumor very much larger than can be accounted for on the patient's statement of the history of her case. Such is sometimes the case in *hydatidiform* pregnancy, of which the following is an instructive instance:

The patient, aged 28, had been married three months, was last unwell the week previous to her marriage. Three weeks before I saw her, she experienced a slight strain in getting over a stile, and dating from that period there had been a slight "show." For a fortnight she had been treated as for an impending miscarriage. The day before I saw her a severe flooding occurred, soon after which I was requested to visit her. On seeing the patient, I was struck with the great size of the abdomen; a tumor, evidently the uterus, extended to two inches above the umbilicus. The first impression produced on my mind was that the pregnancy must have advanced farther than the time stated—three months. On passing the finger, and subsequently the hand, into the os uteri, the organ was found distended with a mass sufficient to half fill a

wash-hand basin, and composed of an ovum which had undergone the hydatidiform degeneration.*

The facts of this case bear out the observations of Montgomery and other writers, that in this peculiar affection, an unusually rapid increase in the size of the uterus may be observed, a rate of increase not observed in normal pregnancy. Dr. Moorhead has recorded a case in many respects resembling the above.†

In cases of *retroversion of the gravid uterus* (see Fig. 237) there is a fallacy liable to rise in reference to the diagnosis, although other circumstances usually lead to the detection of the real nature of the case. The tumor which should be above the pubes is then absent, but it is usually replaced by another—the distended bladder. And it is just possible that the observer, finding a tumor above the pubes answering in position, in size, and in shape, to the tumor expected to be found there, might make an important error in diagnosis. The urinary difficulties, the extreme pain and tension in the pelvis, and other symptoms, however, attract attention, and point out that there is something about the case very unusual at all events. A vaginal examination would at once enable us to explain the nature of the condition.

Lastly must be considered those cases in which *extra-uterine pregnancy* is present. These cases are not very common, but the symptoms observed under such circumstances are generally such as to occasion more or less obscurity in the diagnosis. The more common case is that known as Fallopian pregnancy, the foetus being enclosed in one of the Fallopian tubes. The less common case is that in which the foetus is developed in the abdominal cavity. The tumor presented to the touch in such cases may be situated in the middle line, but usually it is to one side. There is little in the tumor itself which is characteristic or which would enable us to distinguish between it and normal pregnancy, unless the nature of the case were suspected, and special care taken. The accompanying symptoms are, however, usually peculiar, and to these we must look for aid in the diagnosis. It more frequently happens that one of the terminations of this abnormal pregnancy has arrived before the diagnosis has been made out. The terminations are various. Thus the foetus may grow to its full development, then die and remain in the abdomen, or it may burst from the cavity in which it is enclosed (whether the Fallopian tube or a cyst) into the abdomen, before arriving at full development, occasioning in the latter case often frightful hæmorrhage and sudden death. Or the death of the mother not ensuing, the foetus becomes encysted and remains enclosed in the abdominal cavity. It may there remain for many years, giving rise to no particular inconvenience, or, after a variable time, a process of suppuration may be set up, in the course of which the remains of the foetus are expelled, through a fistulous opening either in the abdominal walls, the intestinal canal, or the bladder.

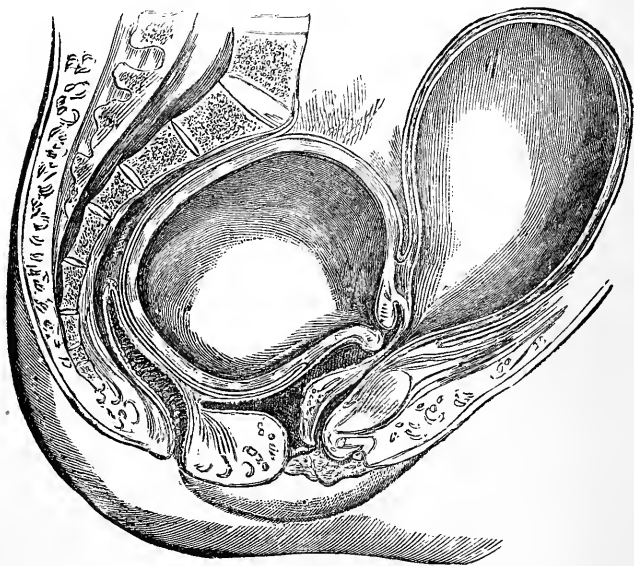
A woman, the subject of extra-uterine pregnancy, may present no symptoms of an unusual character up to a considerably advanced period of gestation. Such may, however, set in at a much earlier period, and this depends partly on the location of the foetus. The symptom which in some cases first attracts attention is, that the patient, though supposed to be pregnant, has what she considers to be a catamenial discharge.

* The case is more fully reported in the *Lancet*, vol. ii., p. 369, 1862.

† *Lancet*, vol. i., Feb. 21, 1863.

Discharges occurring in a pregnant woman should lead us to investigate the case more particularly. One of the most frequently observed symptoms in extra-uterine pregnancy is pain of a dragging, sharp character in the pelvic region, the abdomen being often also tender to the touch. Yet there is nothing very significant in such symptoms, for patients who are the subjects of normal pregnancy not uncommonly present symptoms such as those which have been described. And if the patient be examined *per vaginam*, we usually find the os uteri presenting characters such as are in normal pregnancy. The use of the sound would of course inform us whether the uterine cavity were empty or not; but there is this difficulty in the use of the sound in the diagnosis, that it is only safe to

FIG. 237.



use it when we are absolutely sure that the uterus does not contain an ovum. Practically, the sound is of little service in the diagnosis.

State of the Skin covering the Abdomen, and Condition of the Umbilicus.

—Various peculiarities in the condition of the skin covering the abdomen, and of the umbilicus, have diagnostic significance and value.

The most important peculiarity in question is a change observed in the greater number of cases of pregnancy. There is found “a colored line of about a quarter of an inch in breadth, extending generally from the pubes to the umbilicus, but not unfrequently thence to the ensiform cartilage; its hue is some shade of brown, but sometimes partaking of the yellowish tint of ochre, and sometimes amounting to a full-bodied dark amber” (Montgomery). Around the umbilicus, too, a dark-colored disk

is often found, which Dr. Montgomery terms the "umbilical areola." The two may, and often do, exist together, but the umbilical areola is considered by Dr. Montgomery as of higher value as a positive indication of pregnancy than the dark abdominal line. These changes in the skin above and round the umbilicus are not found in all cases of pregnancy; they are not found equally developed in different individuals at the same period of pregnancy; they are most marked in dark women; they are less to be depended upon as diagnostic of a second than of a first pregnancy. The observer must be cautioned, however, that until he has actually acquainted himself with the nature of the discoloration due to pregnancy, by inspection of some few undoubted cases, he will not be in a position to make use of this means of diagnosis.

Auscultation of the Abdomen.—In the employment of auscultation we have a means of diagnosis, in cases of suspected pregnancy, of the greatest possible value and importance. Every student of medicine should diligently prepare himself for making use of this means of diagnosis by practicing it on all occasions.

It is now necessary to give an account of the sounds heard on auscultation of the abdomen—(1) under ordinary circumstances; (2) when pregnancy is present; to indicate the value of the latter as diagnostic of pregnancy; and to point out how, and what, fallacies are likely to be encountered.

The stethoscope should be preferred to the application of the ear directly to the abdominal parietes. The abdomen must be quite uncovered, though a practiced observer may allow a very thin handkerchief to be interposed, if it appear advisable. The patient must be lying down, and the abdominal walls relaxed by instructing her to draw up the knees. The observer, standing on the patient's right side, holds the stethoscope with the left hand, grasping it firmly close to the end which is to be applied to the abdomen. The stethoscope is then firmly, gently, but steadily pressed inward over the spot to be examined, and there maintained while the ear is applied. When the abdomen is tight, it will often be impossible to hear the foetal heart unless these precautions are attended to; and, indeed, it is sometimes necessary to press the end of the stethoscope inward a considerable distance, to obtain the desired result. This is particularly the case when there is a tolerable quantity of liquor amnii in the uterus, when there is any fluid in the abdomen covering the tumor to be explored, when intestines are interposed, or when the walls of the abdomen are unduly loaded with fat. Unless the stethoscope be held as directed, it is apt to roll about over the surface of the uterine tumor. The employment of sudden force is very objectionable: the pressure of the stethoscope inward, when necessary, should be slow and gradual. The examination must be conducted in a quiet room.

The sounds which may be heard on applying the stethoscope to the abdomen of a woman who is not pregnant may be confounded with those due specially to pregnancy, and *vice versâ*. The sounds coming under the first head are—(a) Sounds produced by passage of flatus from one part of the intestines to another; (b) sounds due to pulsation of the heart; (c) sounds due to pulsation of great vessels in abdomen, in aneurisms of the abdomen, etc.; (d) sounds due to respiration. Now, respecting the sounds due to motion of flatus, etc., within the intestines, a very little practice will prepare the observer to at once recognize them. Respecting the sounds due to pulsation of the heart, some important facts are to be remembered. It has been occasionally found that the beats of

the mother's heart were quite audible very low down in the abdomen, and there are cases on record in which, the heart beating with unusual rapidity—*e.g.*, 120–130—and heard about the neighborhood of the umbilicus, these pulsations have been mistaken for those of the foetal heart. This shows the necessity for counting the pulse of the patient before employing auscultation. The sounds proceeding from the great vessels, etc., of the abdomen will not be described just now, as they will be more fully considered presently. Lastly, the sounds produced by the respiration of the patient are in rare instances transmitted to that part of the abdomen likely to be examined in cases of suspected pregnancy.

Next, as to the sounds heard in cases of pregnancy. These are—(a) Sounds produced by pulsation of the foetal heart; (b) the placental or uterine souffle; (c) sounds due to pulsation in the funis accidentally pressed upon—*funic souffle*; (d) sounds due to the movements of the foetus. Each of these requires a separate description.

(a) *Sounds of Foetal Heart.*—If the patient be advanced in pregnancy, to the seventh or eighth month, and the circumstances of the case are ordinary ones, the foetal heart is usually heard to beat over a space comprising three or four square inches of the abdominal surface, this spot being situated to the left of the umbilicus and a little below this point. If heard at the very earliest moment at which it is audible, the stethoscope would be applied in the middle line just above the os pubis; as pregnancy advances, the point of maximum intensity of heart's beat would travel upward, and to the left. Generally speaking, when pregnancy is far advanced, the foetus lies with its head downward, its back to the left side, and it is through the back of the foetus, which is made by pressure of the stethoscope to come into contact with the uterine wall, and the latter with the abdominal wall, that the foetal heart-beat has to be conducted, in order to reach the ear of the observer. If the foetus be differently placed in the uterus, if the back be turned to the right side—the next most common circumstance—then the heart-beat is heard below and to the right of the umbilicus. And if the foetus be so placed that the breech is lowest in the pelvis, the heart-beat is heard to the right or left of the umbilicus, according to circumstance, but *above* it—that is to say, supposing the pregnancy to be pretty far advanced. At the period when the uterus lies to one side of the abdomen, the situation at which the foetal heart is heard will be correspondingly modified.

The sound heard by means of the stethoscope is like that of the heart of a child in miniature—it is a double sound, or rather a succession of a pair of sounds, the one rapidly following the other. They have “generally received the familiar name of tic-tacs, from their resemblance to the sounds of a watch” (Montgomery). It is scarcely possible to mistake this peculiar sound for anything else, and *vice versâ*: the sound is one *per se*. Its force and intensity are liable to variation; thus, it is very weak and feeble when first heard, and acquires strength as pregnancy advances. But the *rapidity* of the foetal heart-beat, the foetus being healthy, remains almost constantly the same up to the time when labor has fully set in; and this fact has been established by the observations of several eminent obstetric auscultators. The average rate of the foetal pulsation, according to Hüter,* who has made 1195 observations on the subject, is 132. In 10 per cent of his cases it amounted to 144, in 83 per cent to 132, in 7 per cent to 120, and the higher figure was due to the presence of a dis-

* “Monatsschrift für Geburtshk.” Sup. vol. for 1861.

turbing element—movements of the fœtus—in most of the cases. It may here be mentioned that in practice it is found very convenient to follow the method of Schwartz in counting the fœtal pulse—that is to say, to reckon the number of beats in *five* successive seconds, instead of the ordinary method of counting the number of beats in fifteen seconds. Thus, the ordinary fœtal heart-beat is 11 for five seconds, mounting to 12 and descending to 10 in exceptional cases. The statement of Montgomery is, that the pulsations “vary in number from 120 to 160; but the limits are in general between 130 and 150.” This does not really differ from the figures given more recently by Hüter. The rate of frequency is affected by certain circumstances, as previous observers had noticed; but Hüter gives more precise indications on this point. His general results are, that ordinarily fluctuations in the maternal have no effect on the fœtal pulse; that when the mother is the subject of severe inflammatory disease, the fœtal pulse may be permanently increased in frequency; that movements of the fœtus always accelerate the fœtal pulse, this elevation being transitory. Frankenhäuser broached the theory, that the frequency varies according to the sex of the fœtus—that the fœtal pulse has a low average when the fœtus is of the male sex, and a high average when of the female sex; the average number for males being 124, the average for females 144. The truth of these conclusions has been tested separately and independently by Breslau, Hennig, Haake, and Steinbach, whose observations, made on an extensive scale, do not confirm the theory in question. Many circumstances are capable of modifying the frequency of the fœtal heart-beat; and even if Frankenhäuser’s theory should prove on the whole to be correct, this would vitiate the results obtainable in particular cases.*

Next, as regards the period of pregnancy at which the fœtal heart may be heard. Practically, it is a sign of pregnancy which may be ordinarily detected in the *fifth month*. If the observer be experienced, and if circumstances be favorable, it may be heard earlier than this. Depaul heard it as early as eleven weeks and four days after conception—that is, near the end of the fourth month. After it has been once heard in a particular case, it should be possible to hear it up to the end of pregnancy. Hüter states that he has never failed to hear the fœtal heart in the sixth month, unless in cases when the fœtus has proved to be dead. Depaul and Jacquemier failed to hear the fœtal heart in only eight cases out of 906, and in six of these the fœtus proved to be dead.

With respect to the value of the sound of the fœtal heart as a sign of pregnancy, it is at once the surest and the best sign available; and to an observer experienced in obstetric auscultation, and knowing the fallacies to be avoided, it is an absolutely sure sign of pregnancy. But the absence of the sound, or inability to hear it is not always a proof that the woman is not pregnant. The fœtus may be dead. The value of the observation in this particular will entirely depend on the skill of the observer. In a case where a difficulty is found in hearing the sound, it is well to seek for a hard part of the tumor, and to apply the stethoscope over that point; and again let it be stated, practice will do much to remove difficulty of this kind. If the abdomen evidently contain fluid in addition to the tumor we suspect to be the pregnant uterus, care must be taken to apply the stethoscope on the tumor. If the quantity of liquor amnii be much larger than usual, we

* The observations on this interesting subject, and above referred to, will be found in the volumes of the “*Monatsschr. für Geburtsk.*” for the years 1859, 1860, 1861.

may be able to hear the foetal heart only after careful and prolonged search, and then very faintly. The foetal heart-beat, when heard, is a positive sign of pregnancy; when it is not heard, we have to make our diagnosis of pregnancy on other grounds.

(b) *The Uterine Souffle*.—This is a sound synchronous with the mother's pulse, and varying, as the mother's pulse, in frequency. It is ordinarily, and very accurately, compared to the sound produced by blowing gently over the mouth of a wide-mouthed bottle; still more closely it resembles the sound heard in the large arteries of the body, when these are at all subject to pressure. The uterine souffle is heard more generally in one or other of the inguinal regions, at an advanced stage of pregnancy—most commonly, according to Montgomery, at the situation of the right Fallopian tube. It is, however, variable in position, and may be heard in rare cases as high as the fundus of the uterus. Generally, the surface over which it can be heard is limited to a space a few inches in diameter. It is not always to be heard; thus, Naegele found it absent in 20 out of 600 cases. Whether produced in, or by means of, the uterus in a gravid state, it is capable of being closely simulated under conditions altogether different. It may be detected at a somewhat earlier period of pregnancy than the sound of the foetal heart. As regards the value of the uterine souffle as a positive sign of pregnancy dependence can only be placed upon it when the observer is well-skilled.

(c) *The Funic Souffle*.—In rare cases, the funis lying over a solid part of the foetus, and being interposed between it and the stethoscope, a souffle is heard, double, and having the frequency of the foetal heart-beat. This, which is Kennedy's explanation of the matter, is the one more generally received. The sign has little practical value, as it is so rarely and so accidentally heard.

(d) *Sound produced by Foetal Movements*.—This sound, as a sign of pregnancy, has received some attention from the fact that Naegele, its discoverer, ascertained that it could be heard first at a very early period of pregnancy—in the third month—before other auscultatory signs are available, and indeed before other signs, some more, some less important, are discoverable. Depaul, who has written an almost exhaustive work on foetal auscultation, confirms Naegele's views. The sound in question is a slight dull sound, accompanied by a slight or sudden impulse or jerk, and it is the sound of the movement which can be felt by the fingers, as before described (see p. 528). Depaul heard the sound in question in nine out of twelve women who had not passed the twelfth week of gestation.

The value of the sign may be gathered from what has been stated. An experienced observer might thus obtain very early evidence of pregnancy. One not very well experienced in obstetric auscultation would pause and wait until more positive and reliable information could be procured before pronouncing a decided opinion.

Lastly, in respect to all the signs derivable from auscultation, it will have been gathered from what has been said that it is the foetal heart-sound, and that alone, in which any confidence can be placed in the diagnosis of ordinary cases. Unless the observer be very acute, auscultation is of no service when the woman has not passed the thirteenth or fourteenth week. Four months passed, auscultation becomes of the highest practical value.

OTHER CONFIRMATORY SIGNS OF PREGNANCY.

ALTERATIONS IN THE COLOR OF THE VAGINA.—A very remarkable alteration in the color of the lining membrane of the vagina is usually observed in *women who are pregnant*; and the presence of the alteration in question is a valuable sign of gravidity.

For a knowledge of this sign of pregnancy we are indebted to Kluge and Jacquemier. The statements of these observers have received confirmation from extended observations on the subject made by Montgomery.* The shade of color presented by the vaginal mucous membrane is a *livid, dusky hue*, "altogether different from the shade of color seen in ordinary vascular congestion, even when intense, or in cases where there are varicose veins," and it is not capable of being simulated by any other congestion. The alteration in color affects the mucous membrane at the inside of the nymphae near the orifice of the urethra and the clitoris, and becomes more marked as we ascend toward the upper end of the vagina and os uteri. The alteration is thus most evident in the latter situations. It is seen in patches, not being uniformly diffused. Hæmorrhoids will not produce this color of the vagina. Dr. Montgomery had not seen an instance in which it was clearly visible within the first two months; it was frequently not developed until the fourth or fifth, and was sometimes hardly perceptible at all; but he had not seen a single instance in which its perfect condition, as observed in healthy pregnancy, was simulated in any other state of the system.†

The absence of the dusky, livid hue in question is thus not indicative absolutely of absence of pregnancy, but its presence, when well marked, appears to be a sure sign of pregnancy; and one moreover, which may be available at a very early period of gestation.

CONDITION OF THE BREASTS.—The examination of the breasts furnishes us with very important data for the diagnosis of certain conditions or diseases. In cases of suspected pregnancy, the appearances presented by these organs offer not rarely decisive evidence for or against the supposition, as the case may be; provided always that the observer be experienced in the matter, and has so familiarized himself with the usual appearances and changes in these organs produced by pregnancy as to be able to distinguish them, and to assign a due value to the particular changes noticeable in the case under examination. Such familiarity can only be acquired by practice and careful observation.

The changes observable in the breasts may be considered under the following heads: Alterations in the size and texture of the breasts, and alterations visible to the eye only.

1. *Alterations in Size and Texture.*—A simple swelling of the breasts is not in any way to be depended upon as a sign of pregnancy. As a rule, the breasts increase in size during pregnancy, and they begin to increase in size usually at a very early period; but many other causes may produce a like increase in the size of the glands. The increase in size may be due simply to *fat*. The breasts when thus increased in size are more pendulous in appearance, and, what is more important, are much softer to the feel than in cases of pregnancy. The increase in size is evidently due to deposit of a soft, cushiony, elastic material (fat) in and around the glands, and beneath the skin covering them. Enlargement of the breasts

* "Signs and Symptoms of Pregnancy," 2d ed., p. 239.

† Loc. cit., p. 244.

due to pregnancy conveys to the touch a sensation of hard, knotty, tolerably well-defined masses (the lobules of the glands) felt beneath the skin; these being arranged symmetrically around the common centre. The normal anatomy of the mammary gland must be known, or the observer will fail to appreciate to the full the characters now alluded to. In the simply fatty breast the enlargement is chiefly constituted by a soft, uniform structure; the lobules of the glands may still be recognizable to the touch, but they are small in proportion to what is observed under other circumstances. An increase in the size of the breasts due to fat is likely to be observed in women at the climacteric period; and the fact that the menses are irregular or absent, that the breasts are painful, while at the same time the abdomen is noticed to be larger, often induce women at this age to believe themselves pregnant.

Enlargement of the breasts is sometimes a consequence simply of marriage; the glands become tumefied, painful, and more knotty than usual, and, in point of fact, the changes observed somewhat resemble those in pregnancy. The swelling is, however, temporary; after a few days it subsides, or, if it continue, no further changes are observed in the skin around the nipples, such as will be presently described as associated with pregnancy. A slight enlargement of the breasts is frequently present at the catamenial periods under ordinary circumstances; here the breasts return to their normal state during the catamenial interval. Temporary suppression of the menses is very generally associated with mammary enlargement.

Any condition resulting in distension of the uterus may occasion swelling of the breasts. The presence of ovarian tumors is frequently associated with enlargement of the breasts.

It does not always happen that when the patient is pregnant the breasts become enlarged. Thus neither positively nor negatively does the sign in question give reliable information.

2. *Changes in the Nipple.*—One principal alteration in the nipple visible to the eye, and consequent on pregnancy, is a slight increase in its size. It is more tinged and vascular, it is rather darker than previously,* and toward the end of pregnancy the color may become very dark, approximating to that of the skin around. The apex of the nipple during the latter half of pregnancy is usually more or less scaly in appearance, due to the fact that a slight exudation has been going on, on the drying up of which little scales are left behind. The most important diagnostic fact connected with the nipple is the possibility or not of squeezing from it a secretion. The precise value of this latter sign must now be particularly examined.

In order to ascertain in a given case whether a secretion be actually present or not, it is necessary to manipulate in a peculiar manner, too familiar to need description. The secretion is thus pressed outward from the recesses of the gland, and exudes at the orifices of the ducts on the nipple. The human milk is a serous-looking fluid, almost transparent, and unlike the milk of cows. A secretion of milk in the breasts is a valuable sign, but by no means a certain sign, of pregnancy. Cases are on record in which girls have had such a secretion quite unconnected with pregnancy. Montgomery refers to three very well-marked cases of this kind: in one case, that of Baudelocque's, it was observed in a little girl aged eight years only. Again, women advanced in life sometimes exhibit

* "... crassescit papilla, inflata videtur, color ejusdem fit obscurior, simili colore distinguitur discus ambiens." Rœderer, "Elem. Art. Obst."

this secreting power in the breasts; and this is not astonishing, when we find it indisputably proved that, under certain circumstances, the breasts of individuals of the male sex have been known to secrete a fluid to all intents and purposes identical with milk. Next, it is to be observed that women who have once borne one or more children not unfrequently continue to secrete milk for a very considerable time—for many years in some instances; and hence, if a woman has had children, milk in the breasts has very little value as a sign of pregnancy. Dr. Tanner found milk indicative of pregnancy as early as the ninth or tenth week, and he considers a secretion containing, on microscopic examination, the characteristic milk globules, with large oil particles and colostrum granules, as an early and reliable sign of pregnancy in a woman who has never given birth to a child.*

3. *Changes in the Areola.*—The changes observable in the areola are of very great importance. William Hunter, and more recently Montgomery

FIG. 238.†

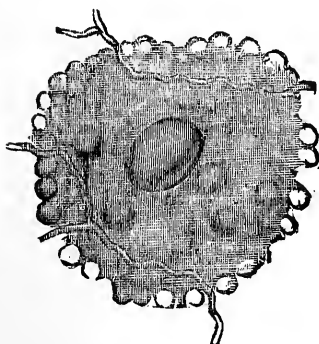
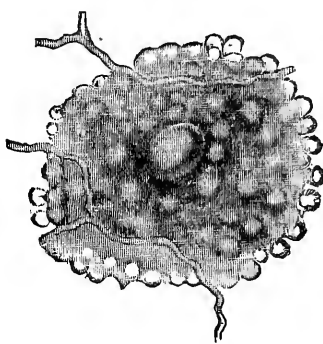


FIG. 239.‡



and Earle, have attached a great degree of value to these changes as a sign of pregnancy. Around the nipple there is a narrow band of integument of a delicate texture, resembling pretty nearly the surface of the nipple itself. This circular band is of variable width in different cases; it is the areola. When pregnancy occurs, the areola becomes larger, altered in color, presents on its surface certain eminences not before observable—not observable to such a degree at all events—and it becomes altered in some other particulars. The value of these areolar changes is unquestionable, but it appears from observations and from facts which have come under my notice that the areola may, apart from the existence of pregnancy, undergo, in women indulging in sexual intercourse, changes which resemble very closely those due to pregnancy.

One change observed, and to which Montgomery has specially directed attention, “is a soft moist state of the integument, which appears a little raised above the surrounding skin, and in a state of turgescence.” § This

* *Op. cit.*, p. 63.

† Fig. 238, after Montgomery, shows areola at third month.

‡ Fig. 239, from Montgomery, shows areola at seven months.

§ *Op. cit.*, p. 105.

change is observable as early as the end of the second month. It is of more diagnostic value in the case of primiparæ.

The deepening of the *color* of the areola is the one which has been the best known. The degree of the change in the color varies in different subjects. In light-haired women it may be slight, but in dark-haired women it is often very striking and intense, the areola in such cases presenting an almost complete blackness at the end of pregnancy. During the first two months little alteration of color is evident, but in the third month the tint becomes perceptibly darker in most cases. In the fifth month it is ordinarily decided, and from this time to the end of pregnancy the tint deepens. In Montgomery's work will be found some beautiful and accurate pictorial representations of the areola at the third, fifth, seventh, and ninth months respectively; the areola of an albino is also depicted. A dark-colored areola is by itself, and in a woman who has had children, more especially if she be of dark complexion, not of great value as diagnostic of pregnancy. In conjunction with other changes it has great value.

The *size* of the areola varies in different persons. The areola may be only a quarter of an inch broad, or it may have a diameter of as much as three inches. When it is very dark it is usually very large also. The point to be observed is *increase* in the width of the areola; ". . . discus ambiens, qui in latitudinem majorem expanditur" (Rœderer); and this is, other signs agreeing therewith, indicative of pregnancy. As the pregnancy advances the width of the areola increases. The areola may in rare cases be found at the end of pregnancy not more than a quarter of an inch broad; absence of a wide areola is therefore not a positive sign that pregnancy is absent.

The Areolar Glands or Follicles.—The most important, the most characteristic, and the most universal of the changes observable in the areola, and due to pregnancy, consists in the formation of little glandular eminences projecting from the surface of the integument covering the areola, not unlike the head of a pin in size and shape, well described by Rœderer in his celebrated work in the following terms: "Discus ambiens . . . parvisque eminentiis, quasi totidem papillulis, tegitur." These little eminences have been termed miniature nipples; Morgagni detected lactiferous tubes going to each of the little tubercles in question, and the milky fluid, it has been stated, has been observed to issue from them under favorable circumstances. The little eminences now under consideration begin to show themselves as early as the end of the second month of pregnancy; they subsequently increase in number, and also in size. They are more thickly placed close to the nipple; are usually from twelve to twenty in number; the elevations to which they give rise are perceptible to the eye and to the touch.

There is another point of some importance. The little eminences due to areolar glands often persist and do not disappear after pregnancy and suckling have come to an end. In one case I distinctly noticed areolar glands well marked, when the lady had not had a child or given suck for five years. The mere presence of these areolar glands cannot therefore, I believe, be relied on as a sign of pregnancy in a woman who has had children. As a sign recognizable at a very early period, as a sign which we find most constantly of all, the presence and *growth under observation* of the areolar glands or follicles is, however, of the greatest practical assistance in the diagnosis of pregnancy.

Secondary Areola.—This term is applied to a change in the areola of a

peculiar character. At the fifth month, not earlier, according to Montgomery's experience, are observed "numerous round spots or small mottled patches of a whitish color scattered over the outer part of the areola, and for about an inch or more all round presenting an appearance as if the color had been discharged by a shower of drops falling on the part."* As pregnancy advances, these appearances are intensified. Montgomery's opinion was that these appearances are quite distinctive, "exclusively resulting from pregnancy."

To sum up these remarks on the characteristic changes in the areola—we have increase in size, change of color, development of areolar glands, presence of secondary areola, moist puffy state of the integument. If the case before us be one of pregnancy, we shall find these changes in association with each other; some will be found more marked than others in different cases.

Other Changes in the Breasts visible to the Eye.—In cases of pregnancy the veins running beneath the skin become more visible than usual. Another change to which reference must be made is presence of little cracks in the integument, giving rise to formation of narrow sinuous white lines radiating irregularly from the centre of the breasts, and produced by the tension and stretching of the skin. These lines are a sign of pregnancy, if the patient have never conceived or given suck, and if the enlargement of the breasts before us is evidently not due to fat; but under other circumstances it is valueless, and may mislead.

General Value of Changes in the Breast as Diagnostic of Pregnancy.—These signs, taken as a whole, should, in reference to the diagnosis of the case before us, be considered side by side with other signs of pregnancy before we proceed to pronounce a positive opinion. In cases of pregnancy the symptoms march onward with a certain amount of regularity, and if one sign be present another should be also. Thus, if in the case before us we find what we consider to be a perfect instance of the pregnancy areola of about the fifth month of gestation, there should be at this time a tumor discoverable in the abdomen; failing to find a tumor, we should at once conclude further investigation of the case to be necessary. The mistakes which have been committed in the diagnosis of pregnancy will on inquiry be generally found to have resulted from the observer attaching an undue importance to some one sign on which he has been accustomed to rely, and from his having omitted to ascertain the presence or absence of other, perhaps more important, signs of pregnancy.

Absence of Menstruation.—This, though a most important sign of pregnancy, is far from being a positive one. (See chapter on Amenorrhœa.)

Quickening.—It is well known that, at a certain period of pregnancy, the patient usually experiences a peculiar sensation in the abdomen in the region of the uterus, due, as is almost generally admitted, to the actual movements of the fœtus within the uterus, and that the sensation in question usually continues to be felt by the patient until delivery has taken place. Popularly, the time at which the sensation in question is first perceived is termed the period of *quickening*, it being believed, although this belief is of course unfounded, that the fœtus only then begins to have a separate and distinct life of its own. Quickening—that is to say, of the sensations supposed to be due to motions of the child—is considered by women in general as complete proof of pregnancy; and

* *Op. cit.*, p. 108.

cases are not at all uncommon in which, in the face of facts demonstrative of the impossibility of pregnancy being present, women continue to imagine that they are with child, led away by their reliance on this supposed infallible sign of pregnancy.

It will be well to consider, in the first place, the nature and character of the sensations conveyed to the mother, and produced by the pregnant condition of the uterus, and, in the next place, other conditions which may give rise to sensations capable of simulating these.

The sensation termed "quickening" is experienced by a pregnant woman usually at the end of four calendar months from the date of conception (Hamilton); or "between the end of the twelfth and sixteenth week after conception, or, adopting another mode of calculation, between the fourteenth and eighteenth week after the last menstruation" (Montgomery). It is sometimes felt at an earlier period than this, in very rare cases in the tenth week from conception; and in some cases it is not perceived until a considerably later period. So far respecting the time at which it occurs. The phenomena of quickening are described by Dr. Montgomery as follows: "Under ordinary circumstances, when quickening does occur, but especially if it happens in conjunction with the sudden ascent of the uterus out of the pelvis, the woman is apt to feel an unusual degree of nervous agitation, which not unfrequently ends in faintness, or even complete syncope, after which she is sensible of a slight fluttering sensation, which from day to day becomes more distinct, until she fully recognizes the motions of the child."*

There has always been some difference of opinion as to the cause of the sensation termed quickening. Thus it has been considered by some to be due to the ascent of the womb into the abdomen, by others to the first peristaltic contractions of the newly organized uterine muscular fibres (Dr. Tyler Smith); and the seat of the sensation has even been held to be in the abdominal parietes. The more general idea is that the sensation is due to the actual motions of the child.

This difference of opinion as to the cause and nature of quickening appears to depend on the fact that the phenomena witnessed in different cases, and termed "quickening," are in reality not always identical; and the term must be considered a composite one, meaning, in one case, the alteration in position of the uterus due to its increasing size; in another, the actual sensation of the child's movements; in a third, possible contraction of the uterine muscular fibres alone. This distinction has not been sufficiently insisted upon. It is very certain that by women in general the term quickening is not held to mean exclusively and always the sensation of the motion of the child: they often mean by the expression a particular attack of faintness, which may not be followed by the experiencing of actual sensation of motion of the child for some very considerable time afterward.

After the period at which quickening is usually observed has passed by, the patient being pregnant, the motions of the child become more and more evident, and the sensations described by the mother are plainly and unmistakably due to the active motions of the *fœtus in utero*. Whatever doubts may exist as to the actual nature and seat of the first sensations experienced, there can be none as to their cause at a later period. The sensations attributable to the motion of the *fœtus* are now peculiar in regard to their suddenness, abruptness, and distinctness. At first the

* *Op. cit.*, p. 146, 2d ed.

sensation experienced is that of "a slight pat or throb, sometimes scarcely more than a flutter," sometimes a tickling or tremulous motion, resembling that produced by a little bird when held in the hand (Montgomery); but later the motions give rise to sensations more distinct and intense.

The motions of the fœtus are not regular, and are not regularly produced by the operation of the same causes. All women do not experience these sensations equally. In some cases all sensation of the motion of the child has been absent from the beginning to the end of pregnancy; in other cases the motions are violent, to such an extent that patients consult us in order to obtain relief from the annoyance and inconvenience they occasion; they sometimes, toward the end of pregnancy especially, occur so uninterruptedly as to prevent the patient from sleeping; and there is usually some one position in which the patient is more particularly liable to be troubled with them.

The observation of Hamilton should always be borne in mind, that "no woman ever yet fancied herself pregnant without also persuading herself that she felt the motions of the child."

In women with *abdominal tumors*, sensations of movement are sometimes present; in cases of ovarian tumor, an irregular pulsatile sensation is sometimes perceived, due, probably, to the pulsations of the aorta or of the great vessels lying behind and pressed upon by the tumors in question. Where the uterus is distended by retention of menstrual fluid, by the ovum in a condition of hydatidiform degeneration, or otherwise, and sensations like those due to motions of a child are present, the cause of the same is probably the contraction of the uterine muscular fibres. Dr. Montgomery relates three cases in which these anomalous sensations of motion were due to "hydatid pregnancy." The sensation was different from that experienced in ordinary pregnancy, and was described as a peculiar crawling or sliding sensation.

Comparative Estimate of the Value of Different Signs of Pregnancy.—Perfect evidence of the existence of pregnancy is not obtainable until after the third month, unless in those very rare cases where the foetal heart may be heard just at the end of this time. The evidence obtainable before this date only enables us to come to the conclusion that pregnancy is *probable*. The signs (probable ones) of pregnancy up to this time are—suppression of the menses, swelling of the breasts, descent of the lower part of the uterus in the pelvis, flattening of the abdomen.* An examination will not usually enable us to give a positive opinion, if undertaken at this time.

After the end of the third month, during the fourth and fifth, an abdominal and a vaginal examination give, or may give, decisive indications. Menstruation is still absent in ordinary cases; the breasts continue to enlarge, and the areolar changes become developed; the os uteri undergoes its characteristic changes; the uterus can be felt to be enlarged from the vagina and above the pubes; the vagina assumes a dusky hue; the motions of the fœtus can be felt by the observer and by the patient; ballottement is recognizable; the sounds of the foetal heart can be heard.

After the fifth month and up to the end of pregnancy the symptoms just described *continue* and become intensified.

* This flattening of the abdomen was reckoned by the older authorities as an early sign of pregnancy.

"En ventre plat
Enfant il y a."

Thus ran the old proverb. Montgomery, *op. cit.*, p. 157.

The signs of pregnancy have been divided into three classes by Montgomery—(1) Presumptive; (2) probable; (3) unequivocal. Practically, however, there is no great difference between what is presumptive and what is probable; and if distinctions are to be drawn between shades of belief, the division might be extended *ad infinitum*. It appears quite sufficient to arrange these signs under two classes—(1) the certain, and (2) the probable, signs of pregnancy.

1. The *certain signs of pregnancy* are—

The active movements of the child unequivocally felt by another;

The presence of the child *in utero* ascertained by ballottement;

The sounds produced by the pulsations of the foetal heart.

A positive opinion may be expressed if any one of these be distinctly observed, the observer being one experienced in such inquiries, and aware of certain possible sources of fallacy. These latter have been described in the proper place. On the other hand, no positive opinion can be expressed if none of these signs be discoverable, however strongly the observer may feel inclined on other grounds to give his final decision. And as caution should be exercised in this particular, so also caution is necessary in giving an opinion that pregnancy is not present unless the negative evidence be very decisive.

2. The *probable signs of pregnancy* need not be enumerated. They include all those not included under the first head, and to each of them this remark more or less applies—that their value as probable signs of pregnancy is exceedingly different in different cases and at different times; the circumstances of the case may elevate one of these probable signs into the position of a certain one, so far as that case is concerned, but this particular sign may be valueless in the next instance.

D.

STERILITY.

General Remarks—Signs of Virility in the Man.

CAUSES OF STERILITY IN THE WOMAN.—1. Mechanical Causes; Condition of Hymen, of Ostium Vaginæ, of Vagina, Presence of Tumors, etc., interfering with Sexual Intercourse; Spasm of Vagina; Conditions of the Uterus, Imperfect Development, Polypi, Flexions, Narrowness of the Uterine Canal, Chronic Inflammation: Diseases of the Ovaries; Altered Conditions of the Fallopian Tubes; Ill-timed Intercourse; Masturbation, Follicular Disease of Vulva; Disease of Rectum.—2. Abnormal Condition of the Secretions; Leucorrhœa, etc.—3. Constitutional or General Causes; Sexual Frigidity; Overfeeding and Luxurious Habits; Obesity; Syphilis.

There is hardly any pathological condition of the generative organs of the female which may not, directly or indirectly, have to do with sterility; hence, success in the diagnosis of the cause of sterility involves a wide and comprehensive view of the subject.

The only practical method of treating the subject of the diagnosis of the causes of sterility is to state definitely and systematically what are

the possible causes. The following list of these possible causes has been made out chiefly on the basis of facts actually observed and recorded.

The question which naturally first occurs to us in ascertaining the cause of the sterility is: To whom is the infertility to be attributed—the woman or the man?

In some cases, although the testes are apparently sound, the secretion itself is deficient in fertilizing power.* If the husband be in good health, and have lived temperately, the power of impregnating often exists up to a very advanced period of life; but in those who have, from an early period of life, been addicted to excesses, the sexual power may fail prematurely. In cases of the latter kind, inquiries will readily show the nature of the deficiency.

CAUSES OF STERILITY IN WOMEN.

The first point to which our inquiries tend is as to the patency of the canals through which the spermatic fluid and the ovule must pass in order to come into contact. The vagina, the uterus, the Fallopian tubes, must offer no impediment, or sterility is inevitable.

We may consider the causes of sterility in the woman under the following heads: 1. Mechanical causes; abnormal condition of some part of the generative passages, such as to interfere with the proper transit of the spermatic fluid or of the ovules. 2. Abnormal conditions of the secretions of the generative passages. 3. Constitutional and general causes.

I. MECHANICAL CAUSES OF STERILITY.

(a) *Abnormal Conditions of the Hymen.*—This membrane is sometimes dense and firm, and effectual intercourse is prevented. Cases in which this condition is met with usually come under our notice owing to a complaint on the part of the husband that intercourse cannot be effected satisfactorily. In some such cases we find on inquiry that the menstrual flow proceeds regularly and without much apparent disturbance; the hymen is not quite complete, but is perforated at one or more points sufficiently to allow of the passing of the menstrual fluid, but not sufficiently so to allow of perfect intercourse. In such cases, sterility generally, but *not always*, exists; for it has been found in cases very well authenticated, some of which may indeed be found in Mauriceau,† not to cite authorities much more recent, that a nearly perfect hymen does not necessarily prevent fecundation. In some of these cases the hymen has been found so dense and firm at the final termination of pregnancy, as actually to impede parturition. Thus the menstrual phenomena may be present, and yet the hymen may be imperforate in a certain degree. In another class of cases the woman has never menstruated, and the hymen is found complete, absolutely preventing the escape of the menstrual secretion. In some rare cases the hymen is imperforate, but is at

* Mr. Curling contends that in the man an inaptitude to impregnate may coexist with the capacity for sexual intercourse—that, in fact, the man is subject to *sterility* independently of virility. The microscope has been occasionally employed with the view of ascertaining the presence or absence of spermatozoa in the seminal secretion, and it is asserted that they have been found absent in some cases of sterility. (See Dr. Marion Sims's important work on Sterility.) Recent observations appear to show that sterility is more often due to imperfect constitution of the semen than was formerly supposed.

† "Maladies des Femmes."

the same time yielding, so much so, indeed, as to allow of ordinary intercourse. A case in which the hymen is absolutely imperforate generally arrests attention from the fact that the menstrual flow has never been observed, and in the case of married women, the aid of the practitioner is more frequently called in for this reason than because of the sterility with which it is also associated. The physical examination will always and readily demonstrate the nature of the impediment to fecundation which exists in both of these important classes of cases.

(b) *Narrowness or Partial Closure of Ostium Vaginæ or Vaginal Canal.*—The vagina is in rare instances *partially closed* at different parts of its course by bands constituting partial strictures of the canal, and rendering intercourse difficult or incomplete, and so leading to sterility. Such a condition of the canal may be congenital, or it may be brought about in consequence of previous difficult parturition, laceration and cicatrization of the torn part leading to contraction, and to partial, or even complete, closure of the canal. The strictures thus resulting may be low down, at the position of the hymen, or higher up near the os uteri.

(c) Or the vagina may be *altogether absent*, or constituted by a small *cul de sac*, barely admitting the point of the finger. This condition may be congenital, or may be produced by difficult labor, laceration of the walls of the canal having been followed by cicatrization and contraction of the same. In the congenital variety, menstruation is absent because of the usually associated absence or defective development of the uterus; in the acquired variety, menstruation may or may not be absent according as the canal is completely closed or not. The canal may be large enough to allow of menstruation occurring, but too small to admit of sexual intercourse, and consequently of impregnation.

(d) *Tumors, etc., interfering with Sexual Intercourse.*—The aperture of the ostium vaginæ being natural in point of size, sterility may exist because of a tumor or growth filling up the canal, or so situated as to interfere with efficient sexual intercourse. An *enlarged clitoris* has been known to have this result.

The canal of the vagina may be occupied by a growth interfering in like manner with intercourse. *Hypertrophy of the cervix uteri* forming a conical tumor sometimes of considerable size, *polypus of the uterus* hanging down into the vagina, or *prolapsus* of the uterus itself, may in particular cases give rise to sterility.

(e) *Spasmodic Affection of the Ostium Vaginæ—Vaginal Spasm—Vaginismus.*—This condition has until recently had hardly a sufficiently prominent place assigned to it in the list of causes of sterility. Its relation to sterility is a very important one. It has excited the attention of De-bout, Michon, Marion-Sims, and others. The affection has been described in some of the older established text-books. The spasmodic contraction is induced or aggravated by attempts at sexual intercourse. Owing to the extreme sensibility of the parts in the first, and to the mechanical closure of the canal in the second place, sexual intercourse is almost or quite impossible, and there is consequently sterility. The nature of the affection has been discussed in a previous chapter.

(f) *Condition of the Uterus.*—*Absence or imperfect development of the uterus* is a cause of sterility the existence of which is only to be substantiated by an internal examination. (See Examination of the Vagina.) There is a class of cases which comes under the present category, and which is very interesting from a practical point of view,—viz., that in which the cervix uteri, or rather the vaginal portion of the cervix,

is small and somewhat infantile in character, the opening being also small. In many such cases infertility has been observed, and has been remedied by simply incising the os uteri, and thus enlarging the aperture.

Infertility is by no means a necessary consequence of absence of the catamenia. It has been repeatedly proved that women may conceive who have never menstruated; and if it became a question whether marriage was allowable in a particular case, the simple absence of this function could not be considered as *definitively* against the propriety of such a procedure, unless that absence were accompanied by other and more essential sexual deficiencies.

The other conditions on the part of the uterus which may cause sterility will next be enumerated. First are to be considered those cases in which the cavity of the uterus is occupied by tumors—*polypi* of the uterus. The presence of a polypus, even of a somewhat considerable size, in the uterus, does not necessarily produce sterility. *Fibroid tumors of the uterus* are effectual both in the production of abortion and in the actual prevention of impregnation. Out of sixty-nine cases of fibroid tumor recorded by Scanzoni, thirty-five had never conceived. According to my own experience, fibroid tumors generally altogether prevent conception.

Chronic hypertrophy of the uterus, variously termed, also chronic inflammation of the uterus, "chronic infarctus," is a condition unfavorable to fecundity. Scanzoni attributes the sterility of prostitutes to the existence of this alteration. This condition is generally accompanied with congestion and undue fulness of the neighboring blood-vessels, alike unfavorable to healthy ovulation and to the normal development of the ovum within the uterus.

The form of atresia produced by *flexions of the uterus* is, I believe, by far the most common cause of sterility. This subject has been fully considered in the chapters on Flexions and Dysmenorrhœa. The flexion produces sterility because it prevents the passage of the seminal fluid into the interior of the uterus. The cause of dysmenorrhœa and of sterility is often the same. The frequency with which ante flexion of the uterus is associated with sterility is very great.

The *uterine cervical canal* may be *comparatively very narrow*, the seat of the constriction being either at the upper extremity of the cervical canal, where it joins the body of the uterus, or lower down at the os uteri. And there may be *congenital closure* of the canal at the positions indicated. In cases in which there is actual closure of the canal, the os uteri being imperforate, menstruation is of course absent, and there may be menstrual retention. In cases where there is an opening, but a small one, the symptoms are, speaking in general terms, those of dysmenorrhœa. The opening is often small, owing to flexion and consequent compression; but when the os is drawn down, and the canal straightened, the sound enters readily enough.

Conical, or Flexed, or Elongated Condition of the Vaginal Portion.—Dr. Marion-Sims insists, and I believe correctly, on the influence exerted by an abnormal condition of the canal at its lower portion in the production of sterility. The vaginal portion is sometimes too long, and when this is the case it has a tendency to become curved. This curvature (of the portion of the canal within the vagina, be it understood) is sometimes so great that the long tapering cervix is almost doubled on itself. (See chapters on Flexions.) The patency of the canal is thus seriously interfered with, and it is important to bear in mind that dysmenorrhœa is

not necessarily associated with flexion of the canal at this point. The vaginal portion should have a certain length, shape, and direction, and a deviation in either of these particulars may lead to sterility.

Valvular Closure of the Os.—This condition arises when one of the lips of the os uteri is considerably larger than the other. The os has then a crescentic shape, and the orifice is virtually less than it should be. Sterility may be associated with it.

The os uteri sometimes *becomes closed*, and sterility arises in consequence of the opposite sides of the canal becoming adherent after being torn. This is now and then a consequence of labor. In some cases it has been produced by the incautious or improper use of caustics.

Chronic inflammation and induration of the cervix of the uterus are causes of sterility; the opposite sides of the os are hard, firm, and the opening actually very small, although it may appear to be large. The canal is frequently distorted, and the opposite sides actually touching each other. The sound enters readily, but there is nevertheless less patency of the canal than there should be.

In cases of *dysmenorrhœa* attended with expulsion of a membranous structure at each menstrual period, sterility is very generally observed. (See *Dysmenorrhœa*.)

(g) *Diseases of the Ovaries.*—*Cystic or other tumors of the ovary* prevent conception in many cases where menstruation is still present; but the existence of disease in one ovary, or removal of one ovary by operation, is not incompatible with the occurrence of pregnancy. Disease of the ovaries interferes with the fecundity of a woman, when the due secretion of ovules does not occur, and consequently either no ovules, or ovules in a morbid condition, are conveyed into the Fallopian tubes, in which case, however, menstruation would be expected to be absent, or at all events much disturbed; or when the pressure of large tumors of the ovaries dislocates the uterus, and so disarranges the natural relations of this organ as to prevent both the passage of the ovule downward and the entrance of the spermatozoa into the uterus.

(h) *Altered conditions of the Fallopian tubes* may prevent the passage of the ovule into the uterus. Peritonitis occasionally produces such *adhesions of the peritoneum covering the pelvic organs* as to render it physically impossible for the ovaries to be grasped by the fimbriated extremities of the Fallopian tubes; thus the "ovipont" cannot take place. *Atresia*, or closure of the canal, is a condition sometimes met with—a condition of course fatal to impregnation of the ovules from the corresponding ovary. This condition may be combined with *dropsy of the Fallopian tubes*. Fibroid tumors of the uterus occasionally produce occlusion of the Fallopian tubes.

(i) Here may be mentioned a possible cause of sterility, important to bear in mind—*ill-timed sexual intercourse*. It is the fact that women have a much greater aptitude to conceive immediately after the cessation of the menstrual flow, and this, therefore, is the most favorable time for sexual intercourse. It is related that Catherine de Médicis, wife of Henry II. of France, became pregnant after having been sterile for many years, apparently in consequence of following the advice of the physician Fernel, that sexual intercourse should only take place at the time in question.* It may turn out on inquiry in particular cases of sterility, that it has been the custom to act in ignorance of this fact.

* Montgomery, *op. cit.*, p. 479.

(k) Under the next head may be included a number of causes occasionally, but by no means necessarily, leading to abortion. Thus, cases in which *masturbation* is practiced, cases in which sexual intercourse is allowed to take place *too frequently*, cases in which the vulvar aperture is the seat of disease, as in *follicular inflammation of the vulva*, are those coming under this category most deserving of mention. *Diseases of the rectum* have been known to be associated with sterility.

2. ABNORMAL CONDITIONS OF THE SECRETIONS OF THE GENERATIVE PASSAGES.

Leucorrhœa.—Under ordinary healthy conditions, contact with the secretions of the mucous membrane lining the cervix, the uterus, and the vagina, does not at all impair the vigor and activity of the spermatozoa, in which the power of fertilization resides; but the secretions may be so altered as to materially affect the activity of the spermatozoa, so as to prevent mechanically, by their viscosity and tenacity (Dr. Tyler Smith), the passage of these bodies into the cavity of the uterus. The vaginal secretion is naturally acid, the cervical mucus is naturally alkaline; the healthy degree of acidity and alkalinity respectively is not hurtful to the spermatozoa; but it has been shown experimentally that, if the vaginal mucus be too acid, or the cervical mucus be too alkaline, the spermatozoa subjected to the direct influence of these secretions quickly lose their power of motion. The relations of leucorrhœa to sterility have been fully discussed by some late observers, by Dr. Whitehead,* Dr. Tyler Smith,† and Dr. Marion-Sims‡ in particular; and each of these authors cites numerous cases of sterility associated with leucorrhœa, and in which there would seem to be little doubt that the influence of the leucorrhœa in producing the sterility was due, in great part, to the existence of this morbid condition of the secretions.

3. CONSTITUTIONAL AND GENERAL CAUSES OF STERILITY.

One of the conditions here to be mentioned is *sexual frigidity*—a want of inclination for sexual intercourse. There can be no question that the connection of this frigidity of temperament with sterility has been much overrated. Women conceive and bear children who evince little or no sexual inclination. This condition is only *necessarily* associated with sterility when the generative apparatus is deficient and imperfectly developed; and no positive deduction can be drawn from such disinclination as to the incompetency of the woman to conceive.

When great *general debility* and *anæmia* are present, it is often the case that conception does not occur. The ovarian function suffers in common with the functions of the body generally, and the woman is not apt to the procreation of children. With anæmia disorder of the menstrual functions frequently, as is well known, coexists; the cases are few in which, menstruation being present, the sterility is dependent on the anæmia.

Another condition, the opposite of that in anæmia, is more often the cause of sterility—that, namely, produced by *over-feeding* and *luxurious habits*. It is matter of common observation that the laboring classes,

* "On Abortion and Sterility."

† "On Leucorrhœa."

‡ "On Sterility."

amongst whom destitution frequently prevails, are prolific in a degree not witnessed in the higher ranks of society. "It is," said the late Dr. Marshall Hall, "incontrovertibly proved by Mr. Sadler, in his work on the 'Law of Population,' that the fecundity of the human race is diminished by the indolent and luxurious mode of life prevalent among the rich, while it is augmented by the laboring habits and spare diet of the poor . . . the proportionate infecundity of the two being, in general terms, as six to one."*

In women who are *unusually fat* an inaptitude to conceive is often observed.

Syphilis.—It is well known that the presence of syphilitic disease in either parent is frequently the cause of abortion or of premature birth. It may be questioned, however, whether the presence of syphilis is not occasionally the cause of sterility by destroying the product of conception at so early a period of the pregnancy that the very existence of pregnancy is for that reason unrecognized—the woman being really capable of conceiving, but the product of conception quickly perishing. The effect of syphilitic disease in disturbing the normal growth of the decidua at the commencement of pregnancy has hardly been, as yet, the subject of attention; but it is quite possible that disease of the decidua of a syphilitic character may come hereafter to be a recognized pathological condition. Facts which have come under my own observation have led me to suspect that syphilis may give rise to the effect here alluded to.

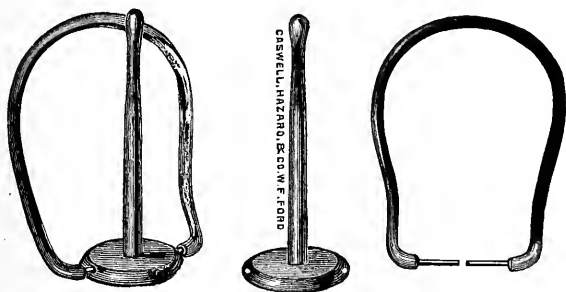
Conclusion.—In endeavoring to ascertain the cause of the sterility, it will be necessary for the observer carefully to examine into the history and antecedents of the patient, the manner in which menstruation is performed, and the general condition of the bodily health. Further, it will generally be necessary to examine the vagina and the external generative organs, and, if no cause for the sterility be there found, to examine the uterus. In carrying out the examination of the parts in question, the eye and the touch are both to be employed. In investigating the condition of the uterus, the speculum and the uterine sound, one or both, are required.

* "On Constitutional Diseases of Female," 1830, p. 7.

E.

SIMS'S RETROVERSION PESSARY.—PAGE 286.

I have lately shown the profession in New York a pessary which I have used for a year and a half. It is based on the principle of Sims's uterine elevator, which, in the uterus and unlocked, causes the body of the uterus to assume a position of anteversion when the instrument is pushed backwards in the axis of the vagina. My pessary consists of a hard-rubber stem with a button-like base, to which is attached a ring having the shape of the posterior half of a Hodge-pessary. At the points where the ring fits into the base of the stem are two bends or shoulders, so that when downward pressure is exerted upon the stem against some resisting body, the ring is tilted upwards. If we use such an instrument upon a retroverted



Dr. Sims's Pessary.

uterus the result is as follows: The ring, fixed behind the symphysis, elevates the uterus and prevents the descent of the cervix, and the fundus uteri tilts forwards. The ring is prevented from slipping down below the symphysis by means of the two bends above mentioned. These bends are so constructed that when the base of the stem rests against any resisting body (as the posterior vaginal wall) the ring must form an acute angle with the stem. To insert the pessary the patient is placed in Sims's position, a speculum inserted, the anterior uterine lip pulled down and fixed by a tenaculum, and the end of the stem is slipped into the os. Gentle pressure upon the disc pushes the stem up into the uterine canal, and then

the ring is lifted up behind the symphysis. On the patient standing, the ring takes its *point d'appui* at the symphysis, the cervix uteri is forced upwards and backwards, and the fundus falls forward where it should be.

The instrument is especially applicable to a retroverted uterus which has a neck so short as to allow the ordinary ring pessaries to slip over it. The instrument may be worn for months, if occasionally cleaned. Its use is not restricted to married women. The rings and stems are of various sizes and interchangeable. This peculiar form of a ring may be attached to a galvanic stem when it is desirable to use one. This pessary will keep a uterus up and anteverted even when the perineum is lacerated, for the point of support is the symphysis. The length of stem should be less than the depth of the uterine canal, and the ring used should be carefully adapted to each case. With this pessary applied, the os externum remains pretty much a fixed point; but the fundus enjoys a large degree of mobility, the only direction in which its movement is restricted being posterior to the vaginal axis. I have used the instrument in many cases and always to my perfect satisfaction. It is also indicated in those many cases of retroversion complicated by a prolapsed ovary. An ordinary ring pessary is here almost always a source of additional suffering. With the pessary I here show the ovaries are lifted up out of the retro-uterine pouch along with the fundus uteri.

If the uterus is retroverted and held down by adhesions, they should be forcibly broken up under ether before this or any pessary can be of service.

In retroflexion it may be employed after dilatation of the cervical canal.

F.

ABDOMINAL DRAINAGE IN LAPAROTOMY. PAGE 859.

I here present an illustration and description of the drainage-tube I always use where it is necessary to drain the peritoneal cavity.

It is made up of a small tube of entry within and reaching nearly to the bottom of a larger tube of exit. The larger tube is perforated; the calibre of the smaller inside one



being unbroken. The two together form the tube I now describe. It is a double-current tube, made of hard rubber. The tube is left *in situ* during the process of washing out the pelvic cavity, and the dressings are not disturbed. A piece of rubber tubing is attached to each branch of the tube, the larger leading to a vessel between the patient's thighs, the smaller attached to the syringe with which we pump in carbolized water (2 per cent. - 1 per cent.). The irrigation is continued until the water returns clear, and its repetition governed by the patient's temperature. When not in use the end of the larger drainage-tube is stopped by means of a cork, and the cavity of the smaller occluded by a ligature. I always keep a stock of these tubes in a 5 per cent. solution of carbolic acid.

Abdominal Drainage-tube of Dr. Sims.

They are of various lengths and calibres. There is no danger of the wound becoming infected through the tube, because the latter is always filled with an aseptic fluid. The irrigation may be made with weak solutions of Hydrarg. Bichlor (1-10000 or 1-5000). I can point to a number of my cases saved by the use of the tube. One case especially in which the pelvic cav-

ity was washed out through it every fifteen minutes for more than a day. If the temperature of the patient does not rise in forty-eight hours after the operation, and if after a trial we find that there is no bloody serum or clots in the pelvic cavity, we may remove this tube and insert a smaller soft-rubber one. I will not here enter into the important question (for it yet remains a question with some) of the propriety of using drainage-tubes at all. But I am convinced that they have saved the lives of many of my patients, and the form of tube I now describe gives better results than do those of either soft-rubber or glass. After the operation is completed, the peritoneal cavity cleansed, and the sutures in place but not tied, I introduce two fingers down to the bottom of Douglas' cul-de-sac, and along them as a guide I pass the tube. In the external wound it rests in the lower angle. The sutures are then tied around and above the tube. The dressing selected is then applied over the wound and closely adapted around the tube. We next take the irrigating apparatus (I prefer Davidson's syringe) and pump a few ounces of water through the tube. The ends of the tube are then closed as described, not to be opened unless to see if there is any discharge to escape or for the purpose of washing out the pelvic cavity. Where it is desirable to employ continuous irrigation, instead of a short piece we may employ a piece of rubber-tubing long enough to hang over the edge of the bed and empty into a receptacle on the floor. In this way we employ the principle of the syphon.

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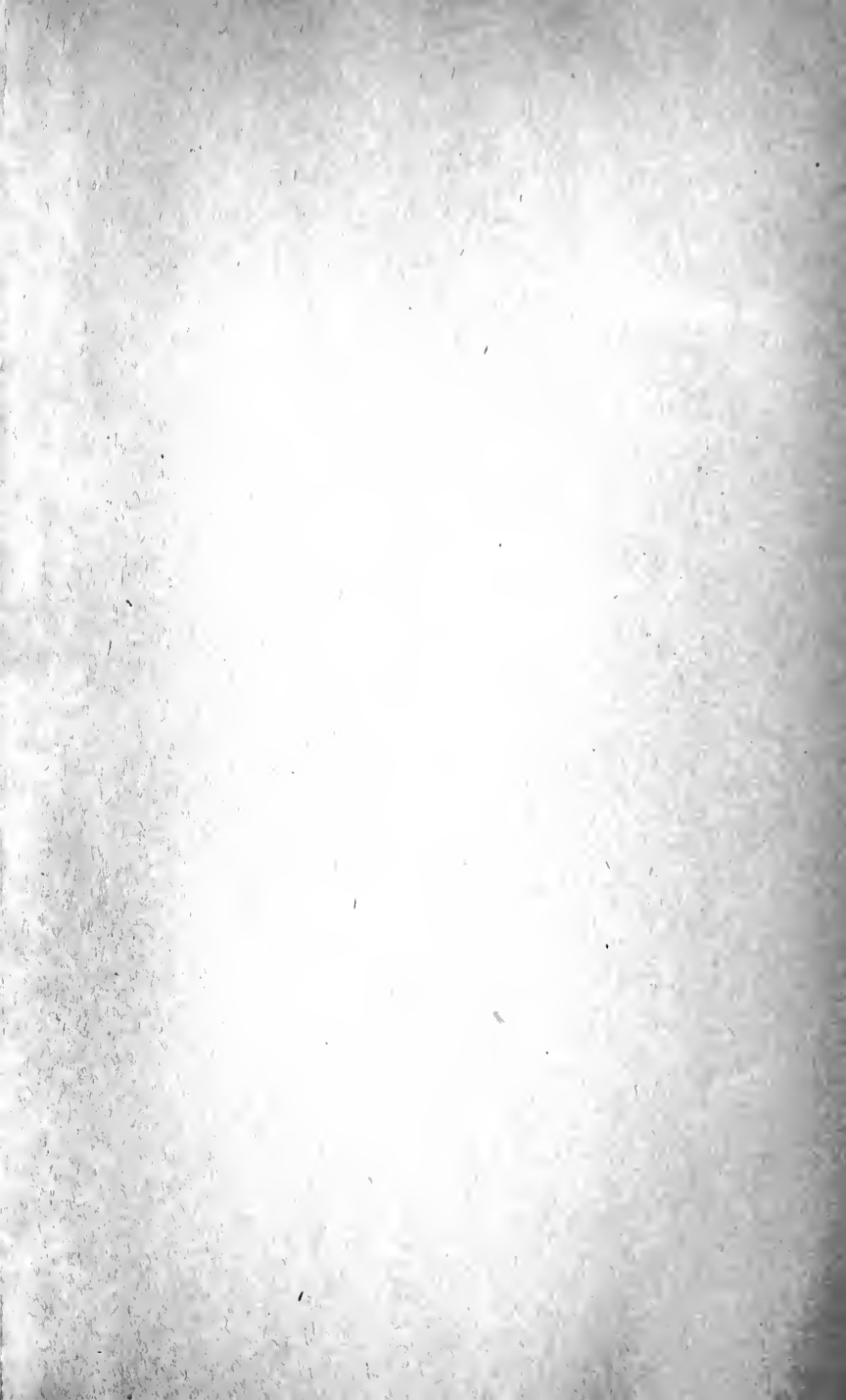
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